

# MINNESOTA MEDICINE

*Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society*

PUBLISHED MONTHLY BY THE MINNESOTA STATE MEDICAL ASSOCIATION

Volume XIV  
Number 3

MARCH, 1931

25 cents a copy  
\$3.00 a year

## CONTENTS

### PRESENT THEORIES CONCERNING THE ETIOLOGY OF ACUTE RHEUMATIC FEVER.

Ralph A. Kinsella, M.D., Saint Louis, Missouri..... 203

### CORONARY OCCLUSION.

Herbert W. Rathe, M.D., Waverly Iowa..... 206

### SOME CLINICAL FEATURES OF CHRONIC PULMONARY FIBROSIS.

Arthur T. Laird, M.D., Nopeming..... 209

### CAUSES OF DEATH FROM ACUTE APPENDICITIS.

Archibald L. McDonald, A.B., M.D., F.A.C.S., Duluth..... 212

### THE PROSTATE IN A GENERAL EXAMINATION.

A. E. Sohmer, M.D., Mankato..... 216

### ACUTE DILATATION OF THE STOMACH.

James Morrow, M.D., Austin..... 218

### NON-MYXEDEMATOUS HYPOTHYROIDISM.

Charles N. Hensel, M.D., F.A.C.P., Saint Paul..... 221

### MEDICAL PIONEERS OF MINNESOTA.

William J. Mayo, M.D., Rochester..... 224

### THE ART OF MEDICINE.

Walter C. Alvarez, M.D., Rochester..... 227

### FIBROSARCOMA OF A MECKEL'S DIVERTICULUM PRODUCING INTESTINAL HEMORRHAGE.

Louis S. Faust, M.D., and Waltman Walters, M.D., Rochester..... 233

### IRRADIATION OF CARCINOMA OF THE CERVIX UTERI.

Harry H. Bowring, M.D., and Robert E. Fricke, M.D., Rochester..... 237

### THE RELATIONSHIP OF EPILEPTIC SEIZURES TO BRAIN TUMOR.

Harry L. Parker, M.B. (Dublin), Rochester 245

### BACKACHE FROM THE ORTHOPEDIC VIEWPOINT.

Ralph K. Ghormley, M.D., Rochester..... 249

### THE IMPORTANCE OF THE TOXIC GOITER COMPLICATING OR COMPLICATED BY OTHER CONDITIONS REQUIRING SURGICAL INTERFERENCE.

Charles Mayo, 2nd, M.D., Rochester..... 254

### INTRA-ABDOMINAL ABSCESS.

P. E. Stangl, M.D., Saint Cloud..... 257

### CASE REPORTS:

Alcoholic Polyneuritis with Cranial Nerve

Involvement: Korsakow Syndrome.

Gordon R. Kamman, M.D., F.A.C.P., Saint Paul..... 259

Hemochromatosis or Bronzed Diabetes.

H. A. Miller, B.S., M.D., and J. J. Heimark, M.A., M.D., Fairmont..... 260

Large Benign Mole of the Scalp.

E. W. Humphrey, M.D., Moorhead..... 262

PRESIDENT'S LETTER..... 264

### EDITORIAL:

The Psychopathic Hospital..... 265

Work and Happiness..... 266

History Committee..... 267

OF GENERAL INTEREST..... 267

COMMITTEE ON PUBLIC HEALTH EDUCATION..... 268

OBITUARY..... 269

### MISCELLANEOUS:

Minnesota State Board of Medical Examiners..... 269

CONSULTATION BUREAU..... 270

### REPORTS AND ANNOUNCEMENTS OF SOCIETIES

Medical Broadcast for the Month..... 271

Rice County Medical Society..... 271

Washington County Medical Society..... 271

West Central and Kandiyohi-Swift Societies..... 271

Minnesota Radiological Society..... 271

American Association for the Study of Goiter..... 271

Women's Auxiliary..... 272

PROCEEDINGS MINNESOTA ACADEMY OF MEDICINE..... 273

PROCEEDINGS MINNEAPOLIS SURGICAL SOCIETY..... 274

PROCEEDINGS MINNEAPOLIS CLINICAL CLUB..... 278

NEW AND NON-OFFICIAL REMEDIES..... 282

### PROGRESS:

Eye, Ear, Nose and Throat..... 283

Gynecology and Obstetrics..... 284

Medicine..... 284

Pediatrics..... 286

Surgery..... 287

BOOK REVIEWS..... 288

Business Manager: J. R. BRUCE, 2642 University Avenue, Saint Paul, Minnesota  
Telephone NE stor 1381

# QUALITY

*Dependable  
Physicians' and  
Hospital Supplies  
of  
Highest Quality*

**McDONALD**  
ST. PAUL, MINN.  
**PHARMACEUTICAL**  
522 North Prior Ave.

Ointments, Suppositories, Eye  
Salves, Tablets, Elixirs, Syrups.

## Distributors for

Johnson and Johnson  
Gauze, Gauze Bandages, etc.

Kimble Glass Company

Label Stick Tin Boxes

Merck & Company

Meyer Manufacturing Co.

Owens-Illinois Glass Co.  
Bottles of all kinds

Parke, Davis & Co.  
Biologicals and Vaccines

St. Louis Box & Label Works  
Paper Boxes and Labels

The Royal Press, Inc.  
Physicians' Stationery,  
Drug Envelopes, etc.

Whittall Tatum Co.  
Laboratory Glassware and Vials

We stock a complete line of Parke, Davis  
& Co.'s Biologicals. Electric Refrigeration  
always insures potent products. Day or  
night service employing Western Union De-  
livery Service.

## NEURODYNE TABLETS (McDonald)

Calphenine—3 gr.  
Phenobarbital— $\frac{1}{2}$  gr.  
Amidopyrine—2 gr.  
(HYPNOTIC)  
500 tablets.....\$6.00

Telephone or write  
us your needs—or  
give us a trial via  
Air Mail. Awake all  
night. Let us prove  
it!

Telephone  
NE stor 1295

# UNIFORMITY

## WHY BUY A NEW HAT?

—When the old one covers the head as well—why? You say the new one reflects favorably on the caliber of the wearer—on the capacity of the brain beneath it to act cleanly, clearly, accurately. May we suggest a **new suit for your instruments**—this cabinet that will reflect the steadiness, the sureness of your skilled hands?



**BROWN & DAY'S**  
Very Special Office

## INSTRUMENT CABINET

A Distinctive Piece of Furniture  
—at a Moderate Price

IN WHITE  
ENAMEL **\$47<sup>50</sup>**

or we will finish to match any furniture you  
have at the small cost of \$2.50 additional.  
(Send us sample of finish you want.)

{Built by men who know best the}  
{needs of Physicians and Hospitals}

Be sure to inspect Brown & Day's model suite of offices  
on display in the New Lowry Medical Arts Building—you  
will go away with new ideas!

**BROWN & DAY, INC.**

62-64 East 5th Street

St. Paul, Minn.

# MINNESOTA MEDICINE

*Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society.*

VOL. XIV

March, 1931

No. 3

## PRESENT THEORIES CONCERNING THE ETIOLOGY OF ACUTE RHEUMATIC FEVER\*

RALPH A. KINSELLA, M.D.

Professor of Medicine, St. Louis University School of Medicine  
*St. Louis, Missouri*

THE researches of Swift and his associates have not only offered a new theory for the etiology of acute rheumatic fever, but have at the same time quickened the study of other infections from a new standpoint. Investigators are striving to evaluate the influence of allergy in the production of symptoms. It is being realized that a so-called infectious disease may not always present a group of symptoms resulting from the contact of the human body with pathogenic microorganisms, but may offer a clinical display, the result of a second contact which follows closely upon a previous experience of a similar kind. The factors which underlie this statement are not always clearly determined.

Acute rheumatic fever had usually been regarded as an acute infection which resulted from the single or first contact of the human organism with some bacterium. Many believed this bacterium to be a streptococcus; others held that the etiological agent was as yet unknown. It is significant that while the proof that a streptococcus was the cause of the disease was not widely accepted, no other form of bacterium was being considered as etiological. In an early communication, Swift and Kinsella<sup>1</sup> denied any causative relationship for the streptococcus even while reporting an incidence of 11 per cent of positive blood cultures. At the same time the reports of Rosenow<sup>2</sup> and Poynton and Payne,<sup>3</sup> describing a high incidence of positive cultures from blood and joints found only limited favor.

One of the chief obstacles to the ready acceptance of the streptococcus was found in the conviction that the pathology of acute rheumatic fever was specific and never found in other dis-

eases in which streptococci were known to be active, such as subacute streptococcal endocarditis. This attitude was clearly defined in the arguments of Thalheimer and Rothschild.<sup>4</sup>

It is extremely interesting to note in how far the old attitude of doubt has been changed by the newer data and equally interesting to scrutinize these data and discover in how far they fail to be valid.

Swift<sup>5</sup> began by considering the similarity between the manifestations of acute rheumatic fever and those of tuberculosis and syphilis which are regarded as allergic. The inevitable inference was, that acute rheumatic fever employed the mechanisms of allergy. Then he observed for the first time<sup>6</sup> that living streptococci injected intradermally in rabbits produced not only an immediate inflammation, but, at a later date, a second milder inflammation which occurred even though no living streptococci could still be demonstrated in the skin. From this it could be inferred that streptococci could produce effects through allergy.

Finally,<sup>7</sup> patients suffering from acute rheumatic fever were found to give positive reactions to intradermally injected killed cultures of streptococcus. From this it could be inferred that the allergic manifestations of acute rheumatic fever were incited by the activity of streptococci, although intradermal reactions are uncertain tests of specificity.

The fact that allergy influences the reaction of the body is apparently true in another form of acute rheumatism in which the etiology is clear, namely gonorrheal rheumatism. If histories are carefully obtained in cases of this disease it is found that rheumatism never attends as an early accompaniment of urethritis, but occurs after

\*Read before the annual meeting of the Minnesota State Medical Association, Duluth, Minn., July 15, 1930.

several weeks or months have elapsed. In the meantime, gonococci are evidently alive but localized. Frequently an entirely unrelated event, such as an acute respiratory infection, seems to be instrumental in permitting the localized gonococci to invade the blood stream and produce acute vascular damage. A recent case illustrates this point. A young woman, known to have had pelvic infection a year previously, became ill with fever and acute inflammation of the throat. The tonsils were prominently enlarged and yielded rich cultures of streptococcus hemolyticus. A series of painful joints followed and after a week the wrist became acutely and persistently inflamed, although the signs in the pharynx subsided. No signs developed in the pelvis. The wrist was drained by incision and gonococci were isolated in pus and then found in urethral smears.

In other words, the human body seems to have one set of reactions when it comes into contact with a disease-bearing bacterium the first time, but an entirely different response if it meets the same organism a second time while still under the influence of the first contact. This alteration of behavior is what is meant by allergy.

In the case of acute rheumatic fever a streptococcal pharyngitis may correspond to the gonococcal urethritis, and a secondary inciting cause such as an intercurrent infection, may precipitate a fresh contact between the body and the streptococcus which is attended by a diffuse vascular reaction recognized clinically as acute rheumatic fever. But a quite different mechanism may operate. In the case just described it is seen that a patient with chronic urethritis can acquire gonococcal rheumatism following an acute streptococcal pharyngitis. Likewise, animals suffering from chronic streptococcal arthritis without bacteremia can display a positive streptococcal blood culture after acquiring the unrelated disease of "snuffles." In other words, the incident which precedes gonorrheal rheumatism need not be closely related, and the incident which precedes most cases of acute rheumatic fever, namely a so-called streptococcal pharyngitis, may in reality bear no bacteriological relationship to the disease. According to this last view the etiological agent would remain, and the sore throat be an accidental intercurrent disease precipitating the secondary reaction called acute rheumatic fever.

Therefore while there is little basis to doubt that allergy plays a part in the production of

acute rheumatic fever, the relationship between the disease and a streptococcus seems to be based on the results of studies by Rosenow,<sup>2</sup> by Clawson<sup>8</sup> and more recently by Cecil,<sup>9</sup> as well as on the studies by Swift<sup>10</sup> just described. The chief remaining objection to accepting the streptococcus as the cause of the disease lies in the alleged specificity of the pathological lesion—the Aschoff body. In diseases known or thought to be caused by streptococci, such as subacute bacterial endocarditis and acute glomerular nephritis, no such lesions can be demonstrated. On the other hand Clawson<sup>11</sup> has declared that the perivascular lesions of rabbits inoculated with streptococci are similar to Aschoff bodies. In a rather extensive experience in this field of experimental endocarditis and experimental arthritis using both hemolytic and non-hemolytic streptococci, we have not been able to conclude that the lesions produced were identical with Aschoff bodies.

The pathology of acute rheumatic fever is that of widespread perivascular reaction, at first exudative and later proliferative, and having a highly specialized character. In its distribution it is similar to the lesions of chronic streptococcal infection in rabbits. The identity of the reaction in the rheumatic nodule, in the heart muscle and in the vessels near the joints has been established by von Glahn<sup>12</sup> and Pappenheimer and by Swift.<sup>10</sup> But the specific character of these lesions has not yet been clearly disputed.

Another objection to the acceptance of the streptococcus as the cause of acute rheumatic fever lies in the fact that the same organism is reported in many other conditions that are unrelated but sufficiently chronic to permit the development of allergy. Again, in a given blood culture from a patient with acute rheumatic fever it is possible to isolate different types of streptococci, in contrast with blood cultures in subacute streptococcal endocarditis where all the colonies are identical.

The modern tendency to emphasize the vascular diseases as primary and such peripheral disturbances as myocarditis, nephritis, and arthritis as merely local manifestations, weakens the idea of bacteriological specificity and makes it unnecessary to believe that a certain selective activity is required for each of these organs to be involved in chronic disease.

The rheumatic lesion of the blood vessels near a joint was found to be unaltered by the sympto-



matic relief given by neocinchophen.<sup>10</sup> In our studies<sup>13</sup> of the influence of sodium salicylate on the dermal reactions of rabbits which suffered from chronic focal streptococcal infection, it was found that although sodium salicylate prevented allergic dermal responses it in no way altered the character of the vascular lesions.

This effect of sodium salicylate in suppressing the allergic dermal reactions of rabbits may explain the apparent efficacy of this type of drug. By inference, it would indicate that most of the graphic symptoms of the disease, such as the joint pains and the serous effusions, are exudative and allergic activities, with which the drug can successfully interfere.

On the other hand, the failure of the drug to alter the proliferative vascular lesions in animals is in accord with the failure of the drug to prevent the proliferative cardiac lesions in human sufferers. Furthermore, since sodium salicylate does not alter the late pathology we are led to the conclusion that the allergic features of the disease are overlying secondary phenomena of little ultimate importance, while the infected focus, the tonsil, the sinus or some as yet unrecognized area, constitutes the underlying primary factor of great importance which is responsible for the proliferative, crippling vascular damages of this disease. Incidentally the prophylactic administration of salicylate or some related compound given at the time of any respiratory infection, should be most useful. The removal of tonsils and the drainage of the paranasal sinuses has so failed to prevent or arrest the disease that it is suggested that some entirely different atrium

of infection is to be located in acute rheumatic fever.

Reviewing the evidence which is available, we can conclude that—

1. Acute rheumatic fever is an acute infectious process in which the body is coming into contact with the causative agent for a second time, while still suffering the effects of the first contact.

2. The evidence that this causative agent is some form of streptococcus is strong but not entirely conclusive.

3. A new approach by chemotherapy is invited by the studies of the effect of sodium salicylate on the allergic dermal phenomena in rabbits.

#### BIBLIOGRAPHY

1. Swift, H. F., and Kinsella, R. A.: *Arch. Int. Med.*, 19:381, 1917.
2. Rosenow, E. C., Jr.: *Jour. Am. Med. Assn.*, 65: 1687, 1915.
3. Poynton, F. J., and Payne, A.: *Researches on rheumatism*, London, 1913.
4. Thalheimer, W., and Rothschild, M. A.: *Jour. Exp. Med.*, 19:417, 1916.
5. Swift, H. F.: *Am. Jour. Med. Sci.*, 170:631, 1925.
6. Swift, H. F., Andrewes, C. H., and Derick, C. L.: *Jour. Exp. Med.*, 44:35, 1926.
7. Swift, H. F.: *Jour. Am. Med. Assn.*
8. Clawson, B.: *Arch. Path.*, 9:1141 (June), 1930.
9. Cecil, R. L., Nicholls, E. E., and Stainsby, W. J.: *Jour. Exp. Med.*, 50:617, 1929.
10. Swift, H. F.: *Jour. Am. Med. Assn.*, 92:2071, 1929.
11. Clawson, B.: *Arch. Path.*, 6:947 (Dec.), 1928.
12. von Glahn, W. C., and Pappenheimer, A. M.: *Am. Jour. Path.*, 2:235, 1926.
13. Hagebush, O. E., and Kinsella, R. A.: *Proc. Soc. Exp. Biol. & Med.*, 27:922, 1930.

## CORONARY OCCLUSION\*

HERBERT W. RATHE, M.D.

*Waverly, Iowa*

**S**UDDEN death due to heart disease seems to be steadily increasing, and coronary occlusion is the most common cause. Since 1920 attention has been focused on this subject and much outstanding work has been done by Herrick, Smith, Pardee, Barnes, and others.

The etiology of coronary disease is as yet not definitely known. Hypertension is no doubt an important factor; however, in my cases it has not been. Anatomical variations play an important part, especially the right angle branching of the left coronary artery, which differs from the branching of the right coronary artery that occurs in the same plane as its subdivisions. Beneke of Berlin believes that the tortuosity of the coronaries creates eddies in the flow of blood; the resultant strain on certain portions of the arteries causes a fibrosis which is a forerunner of occlusion. Others believe that infection plays an important rôle, and no doubt it does in certain cases, syphilis especially.

The pathology of coronary occlusion is myocardial infarction of varying degrees, depending upon the size and location of the artery and the question of whether the occlusion is gradual or sudden. This infarcted area may undergo fibrosis or it may thin out, form an aneurysm, and rupture.

As a rule the onset is very sudden. A large number of these patients will tell you that for some weeks or even months they have had "little twinges of pain" or short attacks of dyspnea and dizziness. The typical picture is that of very severe pain which lasts for some time, often twenty-four hours, and which requires large doses of morphin for even partial relief. The pain may be very slight and the patient complain only of retrosternal constriction, a heavy feeling, or, as some may call it, a discomfort. The areas where the pain is witnessed vary; most often the pain is retrosternal or precordial and may radiate to the neck or to one or both arms. However, it may be referred to the epigastrium, wrist, elbow, or, as in one case I have seen, to the sacral region. Sometimes the patient's complaint will be

only of dyspnea or orthopnea; at other times these symptoms will accompany the pain. Nausea accompanied by vomiting sometimes is complained of, and if the pain is in the epigastrium a differential diagnosis from an upper abdominal lesion is very difficult.

On examination the patient presents a very anxious facial expression with a peculiar ashen cyanosis. Several whom I have seen were transfixed with the pain and would not move from the position they were in, no matter how uncomfortable. If the attack is at all severe, shock is a marked feature with a cold clammy sweat and a fall in blood pressure, often to as low as 60 mm. Hg. systolic. The pulse is weak, rapid, and at times irregular. The heart sounds are distant and may be inaudible; a friction rub and alteration of rhythm occur at times. The signs of early congestive heart failure appear in some cases; then one finds râles at the lung bases, an enlarged and tender liver, and albumin in the urine. After twelve to twenty-four hours there is usually a rise in temperature (99.5° to 101° F.) and a leukocytosis (12,000 to 16,000). Emboli to other parts of the body or repeated coronary emboli are apt to occur following the occlusion.

Electrocardiographic evidence is most often conclusive, especially so when repeated tracings on successive days are taken. I have studied thirty-two cases with the electrocardiograph up to the present time, and in my opinion my chief errors have been in not heeding what I would call only minor evidence. The most typical changes are in the R-T segments with a depressed and inverted T in either leads I or III and an elevation in the opposite lead. An inversion of the T wave in lead III alone is not important, but if there is inversion of this segment in lead I or II it is very good evidence of coronary disease. Other signs of coronary involvement are bundle branch block and notching of the QRS with low voltage.

The prognosis in cases of coronary occlusion varies greatly. The average of several large groups of cases shows that about fifty per cent die during their first attack. It is said that the

\*Read at the annual meeting of the Southern Minnesota Medical Association, Mankato, Minn., August 25, 1930.

older the patient the better the thrombosis is tolerated. This is due probably to the compensatory circulation formed by the Thebesian vessels as well as by anastomosis between various portions of the coronary system. Many of these patients recover and never have another attack; others will die in a second or third attack or develop a congestive heart failure. There are many who are still alive following attacks eight to ten years ago of what undoubtedly was coronary occlusion. It is well worth our while to remember that some of these cases are not fatal and are worthy of our best efforts in treatment.

The acute case should have absolute bed rest with sufficient morphin to relieve the pain. When the severe pain has subsided another sedative may be substituted for the morphin, but bed rest must continue for a considerable time. Favorable conditions for extending the patient's activities are a return of the blood pressure level to near normal, improved quality of the heart sounds, absence of subjective symptoms, and, if an electrocardiograph is available, an improvement in the electrocardiogram. Theobromin, theophyllin, and euphyllin are drugs which are used to promote coronary circulation. Experimentally euphyllin has proven the most efficient and clinically I believe it is the most satisfactory. Digitalis is not indicated in the acute stage.

#### CASE REPORTS

*Case 1.*—A man, sixty years of age, who had been an office man for years, was first seen by me on April 2, 1930. His family and past medical history was irrelevant. There was no previous hypertension to his knowledge. He did not smoke and was moderate in his exercise. On the evening of March 28, 1930, he had a severe pain in his upper abdomen, which lasted for about an hour. He was nauseated and vomited but got no relief on vomiting. He thought it was acute indigestion. He was in moderate shock, and his blood pressure was 118/78. The heart sounds were distant and of poor quality; there was no friction rub, fever, or leukocytosis. On April 2, 1930, his electrocardiogram showed a negative T wave in lead III and a rounded elevated R-T segment in lead III. On May 21, 1930, he had a negative T wave in both leads II and III. He has been on bed rest most of the summer and at present from all indications is doing well.

*Case 2.*—A man, forty-seven years of age, had been a machinist for twenty-five years. His father died suddenly at the age of sixty-six years; his death was said to have been due to heart failure. The patient had never been ill before except for a mild attack of influenza in 1918. On December 9, 1929, he had an attack of knife-like pain retrosternally, had marked dyspnea, and could not move for about ten minutes. An uneasy sensation persisted for four days when he

had another attack which lasted an hour and radiated to both arms. He had had several attacks since, the most severe one on January 29, 1930, which lasted for twelve hours. Following this there had been a numb

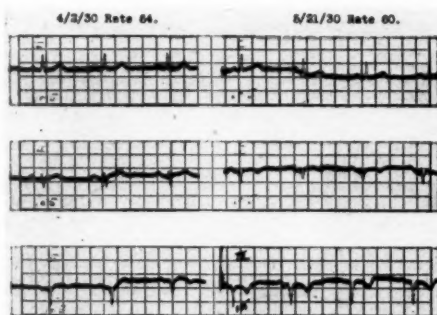


Fig. 1. Case 1.

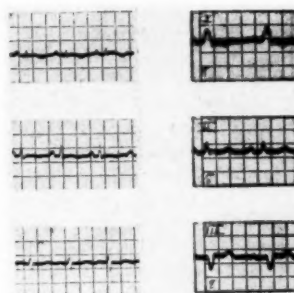


Fig. 2. Case 2.

Fig. 3. Case 3

sensation in both arms up to February 2, 1930, when I saw him first. At that time he was very ill. The ashen cyanosis mentioned above was marked, and he was very apprehensive. His pulse was very weak, and the heart sounds could hardly be heard. There was no friction rub. There were râles at both lung bases, the liver was enlarged and tender, and there was albumin in the urine. His blood pressure was 108/86, temperature 99.8° F., and leukocytes 12,000. An electrocardiogram showed a negative T wave in leads I and II. He had several more attacks with increasing congestive heart failure and died two months later. An autopsy at the State University Hospital revealed coronary thrombosis with myocardial infarction.

*Case 3.*—A woman, forty-nine years of age, had been a school teacher for a number of years. She had hyperthyroidism in 1918 and a thyroidectomy had been performed with relief. In December, 1928, she again had hyperthyroidism and was relieved by surgery. At this time her blood pressure was 160/68. Her convalescence was uneventful and she felt fine. On March 14, 1929, while hurrying to a train, she had a severe retrosternal pain radiating to the left elbow. On April 24, 1929, she was weak, listless, and dyspneic on the slightest exertion. Her color was good, pulse regular, and rate normal. The heart examination revealed a

systolic murmur along the left sternal border and a split first sound at the apex. Her blood pressure was 148/108. Her electrocardiogram revealed a complete bundle branch block. She remained in bed for three

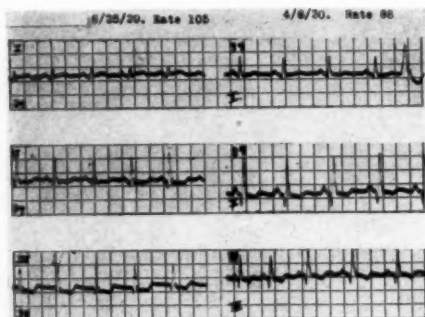


Fig. 4. Case 4.

months and her activity was limited for a year. She is now teaching and apparently is in good health.

*Case 4.*—A man, thirty-seven years of age, whose occupation was farming, consulted me in June, 1929. From December 26, 1928, to January 1, 1929, he had had a mild attack of influenza. On January 6, 1929, he had a severe retrosternal pain lasting from 7 A. M. to 9 P. M. During this time he was dyspneic, perspired freely, and was said to have been very pale. For several weeks following this he had a tight feeling in his chest, but went about his work. On June 22, 1929, he again had pain in the same region, which he thought was even more severe. A physician was called, and a hypodermic was given with some relief. The pain was some better, but was present when I first saw him on June 25, 1929. At this time ashen cyanosis was very apparent and he looked very ill. His pulse was rapid and thready, temperature 101.4° F., and blood pressure 108/86. The heart was enlarged to the left; the point of maximum impulse was diffuse, and his heart sounds were of poor quality. The electrocardiogram at this time showed a depressed R-T in lead III and not so

marked in lead II. He was in bed for eight weeks and was up in a chair for four weeks when I again saw him. His blood pressure was 140/108 and his pulse 76; the electrocardiogram was normal. Restriction of activity was advised. He reported again April 6, 1930. At this time he was dyspneic on exertion, had an uneasy sensation retrosternally, and had a numb sensation in both arms. His pulse was 80 and his blood pressure 146/100. The electrocardiogram showed a negative T wave in leads II and III. I sent him home on another course of bed rest, which he did not follow. He had a severe attack while working on May 10, 1930, and expired.

#### SUMMARY

Coronary occlusion is probably more common in recent years than ever before. It has a definite pathology, a variable clinical picture, and usually a characteristic electrocardiogram. The disease is not always fatal, and if the patient survives the first attack and will follow a regimen of rest and limited activity the prognosis is good. Four cases with electrocardiograms are reported from a series of thirty-two.

#### BIBLIOGRAPHY

1. Barnes, A. R., Whitten, M. B.: Study of R-T interval in myocardial infarction. *Am. Heart Jour.*, II, 142, 1929.
2. Christian, H.: *Disease of Heart*. Oxford Man. Diag. and Treat., III, 260.
3. Elliott, A. R.: The coronary problem. *Ann. Int. Med.*, III, 252, 1929.
4. Herrick, J. B.: Atypical features of acute coronary disease. *Ann. Int. Med.*, II, 105, 1929.
5. Nathanson, M. H.: Electrocardiogram in coronary disease. *Am. Heart Disease*, III, 257, 1930.
6. Parkinson, J., Bedford, D. E.: Successive changes in the electrocardiogram after cardiac infarction (coronary thrombosis). *Heart*, III, 1195, 1928.
7. Whitten, M. B.: Relation of distribution and structure of the coronary arteries to myocardial infarction. *Arch. Int. Med.*, III, 383, 1930.



## SOME CLINICAL FEATURES OF CHRONIC PULMONARY FIBROSIS\*

ARTHUR T. LAIRD, M.D.  
*Nopeming, Minnesota*

THE formation in the lungs of new fibrous tissue, while it results from various causes, produces similar clinical phenomena in different diseases and conditions. In certain cases it so masks the symptoms that would otherwise occur that diagnosis is difficult and it may even conceal the primary disease entirely. In other cases it adds to the basic symptoms of the disease, conditions that are symptomatic only of fibrosis.

In this paper while discussing briefly other forms of lung fibrosis, I want to emphasize the changes produced by fibrosis in the clinical picture of tuberculosis, and the necessity of directing the treatment of a case accordingly.

Fibrous tissue is normally present in the body in tendons, ligaments, aponeuroses, fasciae, in various gland capsules and in certain membranes such as the dura mater. These tissues are composed almost wholly of dense bundles of white fibrils having a course nearly parallel. Between the fibres is ground substance in which are found the cells, irregular and often elongated in form. They are supposed to secrete the ground substance and to be the origin of collagen, which can be converted into glue.

Fibrous tissue is one form of connective tissue and so is related to mucous, reticular and adipose tissue as well as to cartilage and bone, which may sometimes be found in connection with pathological fibrosis.

The abnormal production of fibrous tissue in the body may result from congestion, irritation and from the destruction of parenchyma or other tissues. It may thus be a phase of inflammation. Foreign bodies, dust particles, bacteria and chemical poisons may give rise to it. It is often an attempt on the part of the body to isolate dust particles or disease foci, or to replace destroyed areas with scar tissue. Once under way the formation of fibrous tissue may proceed further than the needs of the body require and become a detriment instead of a benefit.

There are various theories as to the origin of the new fibrous tissue. The majority of pathologists believe it to be derived from fixed connective

tive tissue cells which thus become fibroblasts. Baumgarten, Metchnikoff, Maximow, Krause and others have studied the problem assiduously. The fixed connective tissue cell may be the common ancestor of the fibroblast and of the monocytes of the circulating blood. There have been some attempts to link fibrous tissue formation with cells of the blood or lymph but it is more generally believed that the fibroblast and the epithelioid cells of tuberculosis, arise from old connective tissue cells in situ.

As regards the exact source of the dense fibrils the usual opinion is that they arise from transformation of the fibroblasts, though Baitsell and others consider them to result from a process analogous to clotting taking place in the intercellular substance.

Three chief forms of lung fibrosis may be recognized: the local, involving limited areas in one lung; the diffuse, involving large continuous areas which may extend throughout the greater part of a lung, or even involve both lungs; and the disseminated or generalized, which consists of the presence of scattered fibrous nodules widely distributed, usually through both lungs.

The localized form may be caused by tuberculosis, and other infections, especially when they produce lung abscess. Echinococcus infestation of the lung usually produces it. It follows obstruction to the air passages in atelectasis and infarct. Areas of broncho-pneumonia may become fibrosed. Extra pulmonary conditions such as aneurysm and mediastinal growths may produce it by pressure.

More diffuse fibrosis occurs in tuberculosis, syphilis, influenza, croupous pneumonia and in other infectious diseases. Purulent pleurisy is followed by lung fibrosis more frequently than is generally appreciated. Exposure to irritant gases is said to set in train a course of pathological changes which may ultimately result in the formation of extensive areas of fibrous tissue.<sup>2</sup> Croupous pneumonia sometimes fails to resolve though less frequently than might be thought; chronic passive congestion sometimes results in "brown induration." Collapsed lungs

\*Presented at the annual meeting of the Minnesota State Medical Association, Duluth, July 15, 1930.

if long remaining in that state may become extensively fibrotic.

Pneumoconiosis has been known to the profession for centuries. Paracelsus wrote a book on it. This disease of the lung due to inhalation of various kinds of dust is common but the effects vary with the kind of dust inhaled. Organic dusts are not believed to produce lung fibrosis. Inorganic dusts even vary greatly in the changes produced. Stone cutters, miners of metals found in flinty rocks, grinders and polishers are the most frequent sufferers from miners' phthisis. Coal dust seems to be relatively harmless.

Mycosis of the lungs is claiming more and more attention.

Spirochetal infections frequently produce pulmonary gangrene. Vincent's organism is held responsible in some cases. Infections with yeast-like organisms apparently more often produce fibrosis.

Castellani has prepared quite an elaborate classification based on his experiences in Asia.

The main divisions are: (1) mycosis due to yeast-like fungi; (2) mycosis due to filamentous fungi.

Yeast-like fungi include, among others, blastomyces, cryptococcus, and the monilia (which causes "tea taster's cough"). Due to the filamentous type are the aspergillus infections. These are the cause of pigeon crammer's disease and probably also of an interesting form of lung disease of which Sayers and Meriwether reported 125 cases at the Annual Meeting of the National Tuberculosis Association held in Memphis in May, 1930.

Other fungi which may cause pulmonary mycosis are the various kinds of streptothrix, the actinomyces, and the coccidioides immitis or oidium coccidioides, which is responsible for a disease resembling tuberculosis, of which about a hundred cases have been reported. Most of these have occurred in southern California.

Fungi may be present in the lung as saprophytes, as secondary invaders or as the primary cause of lung disease. While in some cases the symptoms produced resemble those of active tuberculosis, in others the progress of the disease is very slow and its course may be characterized by extraordinary fibrosis.

Carcinomata form the largest group of pulmonary neoplasms. Miller and Jones, discussing primary carcinoma of the lungs, mention two

types often confused with tuberculosis. The first is the scirrhous type of disease, which resembles fibroid phthisis. The second is miliary carcinosis, which resembles miliary tuberculosis. In primary carcinoma of the lung the use of the bronchoscope in order to secure tissue for biopsy sometimes clears up the diagnosis. Secondary tumors in the lungs are more common and more readily diagnosed.

Though the causes of lung fibrosis may thus be varied, the pathological findings and the x-ray pictures produced may be very similar.

Any part of the lung may be the starting point of fibrosis, the tissue about the bronchi and blood vessels, the interlobular septa, the alveolar walls or the pleura. In the early stages of generalized fibrosis there is peribronchial thickening at the root of the lung; later the parenchyma becomes involved. Affected portions on removal are found to be hard and airless and to resist cutting. The fibrous areas consist of dense grayish tissue which may be most prominent at the root of the lung with radiating bands extending out into the lung especially in non-tuberculosis fibrosis. In the tuberculous form, the process often involves the apex. The pleura is frequently involved and much thickened; apical cavities are often present in the tuberculous form and have thick walls. Dilatation of the bronchi and bronchiectasis occurs in extreme cases. The heart eventually becomes displaced toward the affected side. If the fibrosis is extensive, unaffected areas become emphysematous. Where the fibrosis is widely distributed and consists of multiple areas of dense tissue surrounding scattered implantations of irritating substances, small dense nodules are found embedded in comparatively normal pulmonary tissue. In x-ray films various forms of generalized fibrosis may simulate miliary tuberculosis.

The symptoms can be to some extent inferred from the pathological findings. At first the scattered areas of fibrosis may so efficiently enclose the offending foreign bodies that there may be no symptoms whatever, although the disease is progressing. When the cause is not removed, this latent increase in fibrous tissue may continue insidiously for months or even for years. It is especially prolonged in pneumokoniosis. In silicosis it lasts for years. In tuberculosis, even when the disease is not thoroughly arrested, toxemia may be prevented by fibrosis to such an

extent that ability to work is lessened but little and the patient may consider himself well, though expectorating tubercle bacilli. A considerable period of freedom from symptoms is also characteristic of pulmonary mycosis.

When the fibrosis has become further advanced dyspnea becomes a prominent symptom. The patient becomes susceptible to repeated colds and to pneumonia, may develop emphysema, chronic bronchitis and bronchiectasis, have cough and expectoration, and even hemoptysis, but in spite of all these symptoms suggesting tuberculosis, he usually has very little or no fever and considers himself in fair general health, though the duration of the fibrosis may have been many years.

The diagnosis of the various forms of lung fibrosis is often difficult. Resemblance to tuberculosis in their clinical course causes difficulty. Repeated sputum examinations may lead to suspicion that tuberculosis is not present or to the finding of the organism responsible for the condition. Occupational history is most important. The site of the lesion is suggestive, the non-tuberculous conditions being more frequently at the base than at the apices of the lung. The use of potassium iodide in some of the mycotic infections may be a therapeutic test.

A circumstance that gives rise to much confusion is the fact that tuberculosis is often a complication of other forms of chronic lung fibrosis.

The x-ray brings out shadows which are more or less characteristic. Many of them are common to fibrosis in several diseases. They consist of dense hilum shadows and prominent bronchovascular trunks, or of more massive opacities, thickened interlobar septa, broad shadow bands, disseminated nodular opacities, areas of lessened opacity (emphysema), dilated bronchioles and later the outlines of bronchiectatic cavities and of displaced structures.

Three typical forms of chronic fibrosis readily confused are those due to tuberculosis, to dust inhalation and to mycosis. The predominance of fibrosis in a tuberculous lung alters the clinical picture of the disease so completely that it is most important for the physician to be familiar with its effects, one of the most striking of which is the concealing of all evidence of the presence of the disease.

Physical signs and x-ray findings may be present for years in cases long since arrested and practically well. There is no advantage to be obtained by placing such individuals under the rest treatment or sending them to sanatoria. Upon careful inquiry it may many times be ascertained that such individuals long ago had such treatment and profited by it.

In other cases the disease is insidiously advancing in spite of lack of symptoms and the patient may be a carrier and distributor of germs in spite of apparently good health.

In the later stages of fibroid phthisis the picture may be so much that of chronic bronchitis and emphysema from other causes, that the physician is completely thrown off his guard. Area tuberculin testing of school children has led in many instances to an unsuspected adult as the cause of infection of a considerable group of contacts. Grandmothers on account of their close association with children are especially likely to be the guilty parties.

The most practical method of locating these unsuspected spreaders of disease seems to be to give the tuberculin test to large groups of children and then examine thoroughly all adult members of families in which reactors occur.

Other diseases characterized by fibrosis may have few symptoms for a long period. The importance of physical examinations at intervals is evident.

#### REFERENCES

1. Baitsell, G. A., and Mason, Karl E.: The origin of the fibrous tissue arising in the testis of the guinea pig following experimental tuberculosis. *Am. Rev. Tuberc.*, 21:593, 1930.
2. Sergent, E.: Les sequelles respiratoires des intoxications par les gas de combat. *Presse Med.*, 13: 201 (Feb. 14), 1925. Abstract in *Am. Rev. Tuberc.*, 14:35, 1926.
3. Castellani, A.: Notes on certain broncho-mycoses which may simulate pulmonary tuberculosis. *Am. Rev. Tuberc.*, 16:541, 1927.
4. Sayers, R. R., and Meriwether, F. V.: Miliary lung disease due to unknown cause. *Nat. Tuberc. Assn., Memphis, Tenn.*, May, 1930.
5. Evans, Newton, and Ball, H. A.: Coccidioidal granuloma; Analysis of fifty cases. *Jour. Am. Med. Assn.*, 93:1881, 1929.
6. Miller, J. A., and Jones, O. R.: Primary carcinoma of the lungs. *Am. Rev. Tuberc.*, 21:1, 1930.

## CAUSES OF DEATH FROM ACUTE APPENDICITIS\*

ARCHIBALD L. McDONALD, A.B., M.D., F.A.C.S.

*Duluth, Minnesota*

TWENTY-FIVE thousand persons die each year from acute appendicitis, according to figures from the Bureau of Vital Statistics. This exceeds the number caused by ectopic pregnancy, pyosalpinx, gall-stones, pancreatitis, splenic and thyroid disease, combined. It is fifty years since Reginald Fitz published his classic description of acute appendicitis, and surgical treatment was seriously proposed. Since then countless studies have been published, and it would seem that ideas on the subject have been well crystallized. However, statistics quoted by Quain<sup>1</sup> and by Sivertson<sup>2</sup> indicate that the death-rate from this cause has increased during the last decade. This in contrast to experience with other surgical conditions.

The present study is based upon the records of the fatal cases of acute appendicitis which occurred during the past five years at St. Mary's and St. Luke's Hospital in Duluth. Its purpose is to determine, as accurately as possible, the factors which contributed to the outcome; and to discuss means by which these might have been avoided or more successfully attacked. Seventy cases are included, twenty-five of which came to autopsy.

TABLE I

	Total Cases	Deaths	Per Cent
Surgical Cases .....	32,954	724	2.3
Acute Appendicitis .....	1,574	70	4.5
Percentage of Total.....	4.7	10	

These figures show that ten per cent of the surgical deaths were due to acute appendicitis, a condition which accounted for less than 5 per cent of surgical patients admitted to the two hospitals.

Except for the fatal cases, the records of the hospitals do not permit division of the 1,574 cases into those limited to the appendix and requiring no drainage, and those with some degree of peritonitis or local abscess formation. For the purpose of this study I have developed tables, using the percentages given by Quain and by Wallace.<sup>3</sup>

Of the seventy fatal cases, the notes indicate that in seven the process was limited to the ap-

pendix and in only two was there any evidence of peritonitis or sepsis during the post-operative period or at autopsy. Of these seven, three involved elective interval appendectomy and probably should not be included in this report. Death was due to extraneous causes as follows: (1) sudden syncope on the tenth day, clinically a pulmonary embolus; (2) hemiplegia in a man fifty-two years of age after 10 days of normal convalescence, together with severe bronchitis; (3) late post-operative pneumonia with empyema in a woman aged twenty-three, following an elective operation for a mild subacute attack, and death eight weeks following operation. The remaining four cases were operated upon early in an acute attack. Two presented serious complications which were important factors in causing death. One of these, a diabetic girl of seventeen, fairly well controlled by diet and insulin, developed a severe cold, then an acute abdomen with collapse so severe as to suggest acute pancreatitis or ruptured gastric ulcer, and required immediate surgical intervention. A gangrenous appendix was removed under ethylene anesthesia. In spite of active post-operative treatment with glucose and insulin the patient went into coma on the third day, developed edema of the lung and died. Autopsy was negative except for an acute edema of the lung and absence of the islands of Langerhans. The other, an acute alcoholic, aged fifty-seven, suffered a sudden attack and came to operation within twenty-four hours. Post-operative delirium and marked distention appeared and the patient died on the fifth day. In the other two cases death was frankly due to peritonitis and sepsis. One, with post-operative paralytic ileus and late enterostomy, died on the sixth day. Autopsy disclosed generalized streptococcus peritonitis. In the other, the wound broke down on the tenth day with a fecal fistula, fever persisted throughout, and death occurred on the sixteenth day. Autopsy disclosed a pelvic, and also a perirenal abscess. It is probable that both of these should have received immediate drainage, and one of them an early enterostomy.

\*Read before the annual meeting of the Minnesota State Medical Association, Duluth, Minnesota, July 15, 1930.



TABLE II

LOCALIZED					PERITONITIS					
	No.	Per Cent	Mortality		No.	Per Cent	Mortality		TOTAL	
			No.	Per Cent			No.	Per Cent	Deaths No.	Per Cent
Quain										
1,000 .....	551	55.1	2.	0.36	449	44.9	25	5.5	27	2.7
Wallace										
600 .....	398	66.3	2.	0.5	202	33.7	11	5.4	13	2.1
Total										
1,600 .....	949	59.	4.	0.42	651	40.7	36	5.5	40	2.5
DULUTH										
1,574 .....	944	59.	7.	0.74	630	40.	63	10.	70	4.4

Of these seven deaths, three were really late interval operations, of which two were embolic and one was due to late post-operative pneumonia. Two were due to known independent concomitant disease as the chief factor, and two were due to ileus and sepsis, and should have had more extensive primary operation.

On the basis of comparative figures, if the entire series of sixty-three late cases could have been brought to operation before extensive disease had developed, but five deaths would have resulted instead of sixty-three, or a total of 12 for the 1,574 cases instead of 70. Therefore, the most important cause of death was late surgical intervention. We find four reasons for this:

1. The rapid course of the disease. Active peritonitis was found at primary operation in twelve cases within twenty-four hours of onset, and in eight others within forty-eight.

2. Failure to make a prompt diagnosis. Eight patients had been under medical care for more than twenty-four hours before a diagnosis was made and operation offered. Several of these apparently advanced to active peritonitis while under observation. We must ever keep the facts before us; the disease is frequently virulent and rapidly progressive, and as yet we have no fixed or positive evidence to identify these cases. Immediate operation as an emergency is the only justifiable course, certainly in the early cases, provided due consideration is given to possible complications or concomitant disease.

3. Failure to seek medical attention. Twenty-eight of these patients had been ill with suggestive symptoms for from three to ten days before calling a doctor. Twelve were known to have received cathartics. All were markedly septic when coming to operation. Surely the

public is in need of education on this important subject.

4. Surgical intervention was delayed in six cases after the diagnosis had been established, twice, at least, justifiably. However, in only one instance was a well planned expectant treatment followed. While such a course is advocated by some experienced men for a certain group of cases with active or the "forbidding peritonitis" of Deaver, the Crile-Ochsner-Murphy plan of treatment must be rigidly followed.

Of the sixty-three fatal cases with peritonitis at the time of operation, the predominating causes of death are classified: (1) cardio-vascular—two; (2) pulmonary—twelve; (3) sepsis, including ileus—forty-nine.

The two cardiovascular deaths were as follows: A man, aged fifty-two, had been ill for six days before undergoing appendectomy with drainage. On the seventh day of satisfactory convalescence, he presented the clinical picture of an embolus and died suddenly. There was no autopsy. A man, aged sixty-nine, had an appendectomy with drainage on the second day of his illness, had a satisfactory convalescence till the fifth day, when he had a hemiplegia and died. Autopsy demonstrated cerebral thrombosis.

Of the twelve deaths with predominating pulmonary symptoms, three were embolic in origin, three presented evidence of pulmonary lesion before operation, and six developed late post-operative pneumonia. The embolic cases occurred on the fourth, sixth and seventh days of convalescence. One developed sudden collapse with pulmonary edema, and the other two were proven at autopsy. One of the latter also had a large retrocecal abscess which had not been

reached by drainage. Three patients presented unmistakable evidence of pulmonary lesion previous to operation. One was unrecognized and was subjected to ether anesthesia for a prolonged operation of seventy-five minutes for appendectomy and drainage. Pneumonia was diagnosed the next day and death occurred on the second post-operative day. Another received a short chloroform anesthesia because of suspicious lung findings, developed bronchopneumonia and died on the third day. A third patient was explored and drained under local anesthesia during the course of a known pneumonia. Death occurred the next day and no autopsy was permitted. Three other patients developed pneumonia within forty-eight hours of operation, which lasted from forty to seventy-five minutes with ether anesthesia, which may have been a direct cause of the complication. The other three occurred later, following operation in cases which were heavily prostrated with sepsis and peritonitis. These may have been metastatic or asthenic.

More care in pre-operative study, selection of anesthetic, and protection during and after operation, would have prevented some of these deaths. Local or spinal anesthesia, better planning of operative procedures, early use of the oxygen tent, and proper post-operative protection must be given serious attention.

The remaining forty-nine patients died because of direct effects of the disease, namely: ileus or peritonitis with sepsis. Three were hopelessly toxic and obviously overwhelmed by infection when admitted to the hospital. Fairly well conducted expectant treatment was carried out in one instance for two days in an effort to secure some degree of improvement. Then under spinal anesthesia, drainage was attempted, resulting in death on the table. Another patient, who had been ill for a week, came in moribund, was operated on at once under local anesthesia for drainage and died on the table. A third individual, who had been sick for six days, was subjected to sixty minutes of ether anesthesia for appendectomy and drainage, and died a few hours later. These deaths seem to have been inevitable, but better pre-operative study and judgment would have averted ill-advised operative attempts.

Ileus was an outstanding feature in fourteen of the cases, though peritonitis and sepsis, to a marked degree, were also present in all. Five of

these patients, previous to operation, presented such marked distention as to suggest the presence of ileus. In fact, in two instances, the pre-operative diagnosis was given as "intestinal obstruction." Primary ileostomy in addition to appendectomy and drainage was done in both of these, and also in another of this subdivision. The other two patients were badly distended previous to operation. This together with other evidence of ileus persisted till death. While early enterostomy is advised in all cases of ileus, the results are not as promising in cases associated with or due to extensive peritonitis.

One patient developed strangulation of an inguinal hernia on the sixth day following removal of a gangrenous appendix and drainage. Under spinal anesthesia, the hernia was reduced and repaired, and high enterostomy performed, but death occurred twenty-four hours later.

Eight other patients with extensive peritonitis and severe sepsis, also presented marked evidence of ileus, namely: paralysis of the intestinal tract, progressively increasing distention, persistent emesis finally fecal in type, and in three instances bloody discharge from the wound. In two cases enterostomy was done, rather late and without effect. In the usual case of post-operative paralytic ileus, early enterostomy is a valuable procedure. In certain instances of acute appendicitis with beginning ileus, primary enterostomy is indicated, and is often a life saving measure. It adds no burden to convalescence. To be of value it must be done before the gut is entirely paralyzed. In cases far advanced with peritonitis and sepsis, but little benefit can be expected, since peristalsis is no longer present or indeed possible.

In thirty-two cases peritonitis and sepsis must be accepted as the cause of death. It was an important contributing factor in those with ileus and with pulmonary complications. In nine instances, local or generalized peritonitis was drained without removal of the appendix, though in several much valuable time was expended attempting to do a complete operation. In ten cases the notes indicate some degree of localization of peritonitis at the primary operation. In all of these, the process continued to extend. In four instances autopsy disclosed localized abscesses which had not been reached by drainage.

Consideration of this entire group of extensive cases brings out several important questions:

1. That of immediate operation or expectant treatment. In this series there are a number of records which indicate that operation did little to control or limit the septic process, if indeed it did not actually hasten its extension. We must learn to recognize "the forbidding peritonitis" as recently re-described by Deaver.<sup>4</sup> This may be local or general and there is undoubtedly a stage of the process where operative manipulation is likely to do more harm than good. We must study again the classic descriptions of Murphy, Ochsner and Crile, and learn how, in certain carefully selected cases, we can best assist nature to localize and control the inflammatory process. In these, drainage is delayed till a carefully chosen time and then is a simple procedure.

2. Pre-operative preparation. While we recognize the fact that acute appendicitis calls for emergency operation, this is not necessarily true for acute peritonitis. We are forced to the conclusion that several of these patients were subjected to prolonged operation without adequate preparation. Certainly, some delay to overcome shock of travel, prostration, dehydration, if not to secure localization, would have contributed to a more successful outcome.

3. Prolonged anesthesia is always depressing, especially in the presence of sepsis. Yet most of these patients were given ether, or ethylene with ether, for from forty to ninety minutes, which certainly added materially to the operative burden. Local anesthesia, or local, reinforced by nitrous oxide to permit of a short well conducted operation would be preferable. Spinal anesthesia offers ideal facilities for all proper operative procedures, with no serious contraindication except prostration in presence of severe sepsis.

4. Operative technic. This is impossible to judge fairly from the notes in the hospital records. One derives the impression, however, that in most of the cases there was too much manipulation, too little protection of uncontaminated peritoneum, and too much time and energy expended in removing a deep-seated appendix. Also that in many instances more mature experience would have spared the patient much danger.

5. Drainage. Our observations from this standpoint bring out the fact that the classic studies of Yates, Blake, Coffey, and many others

have need to be studied again, and again, and again. Too many operators still believe that free fluid, or even free purulent fluid, necessarily means infection of the entire peritoneum, and make no effort to wall off the truly septic area. In spite of all the published proof to the contrary they still have a childlike faith in the capabilities of two or three cigarette or gutta-percha drains as a means of relieving generalized peritonitis. Some of us must materially revise our ideas on this question.

6. Post-operative care given these patients is only sketchily outlined in the notes. It is quite apparent that many fail to appreciate the fact that operation is only one step in treatment. Some attempt to do too much, many do little or nothing. Few, however, have followed out a well organized plan conducive to localization of the septic process, overcoming shock and acidosis, and preventing ileus.

#### CONCLUSION

There is no classic picture of acute appendicitis which will fit any large number of cases. As physicians, we must appreciate the dangers of procrastination. Prompt diagnosis, careful attention to possible complications, and immediate appendectomy is the only safe course. It is the major hope of materially reducing the heavy mortality of this disease. There is need of a campaign of education for physician and layman bringing out the terrific dangers of delay. The so-called late cases often occur surprisingly early in the course of the disease. Proper management calls for a high degree of mature clinical judgment, and wide experience in operative procedure. Study of the operative notes and results force one to the conclusion that all of us have need to revise our ideas concerning treatment and drainage of appendiceal peritonitis.

#### REFERENCES

1. Quain, E. P., and Waldschmidt: Acute appendicitis, *Arch. Surg.* (April), 1928.
2. Sivertson, Ivar: Acute suppurative appendicitis: Factors in mortality, *Minn. Med.* (August), 1927.
3. Wallace, H. K.: Acute appendicitis. *Proc. Western Surg. Assn.*, 1925.
4. Deaver, J. B.: Appendiceal peritonitis. *Surg., Gyn. and Obst.* (September), 1928.
5. Powell, Cuthbert: Drainage of the peritoneal cavity. *Proc. Western Surg. Assn.*, 1922.

## THE PROSTATE IN A GENERAL EXAMINATION\*

A. E. SOHMER, M.D.

*Mankato, Minnesota*

THE routine general health examination as a prophylactic measure has been emphasized in recent years, and rightly so, in all medical bodies, as well as in public lectures and writings to the laity. Likewise, in the regular examination of every new sick patient, it is proper to make a reasonably thorough survey of the condition or functional capacity of the various organs and systems of the body. The extent of this examination depends somewhat on the object in view, and as the case develops there will be suggested the direction of these inquiries.

The Old Line Life Insurance examination, as the result of actuary statistics, has been standardized, covering quite well the history and the physical examination of the various important systems of the body, and might well be taken as a model on which to plan an examination—details to be worked out according to the findings in each case.

In a life insurance examination, answering the prescribed questions usually satisfies the company. In private work we usually go further, especially if obscure symptoms are in evidence, inquiring into the status of more obscure organs, because the private patient is interested not only in life but in comfort and well-being.

I wish, at this time, to call attention to the prostate gland as a source of disease, and one which is apt to be slighted in the routine of a physical examination. Every male patient who comes up for examination should have a rectal examination to determine palpable rectal pathology, and the condition of the seminal vesicles and the prostate gland—especially chronic prostatitis and the obstructing prostate.

When one mentions chronic prostatitis, the thought comes at once of a venereal disease, past or present; but this is not necessarily so, since a great proportion of cases are non-venereal, the prevailing bacteria being streptococci or staphylococci, rather than gonococci. It is true that gonorrheal prostatitis is quite prevalent and usually becomes a mixed infection in due time; but there is a class of cases of chronic infection of the prostate due to non-venereal origin, to which I

would like to call attention at this time. It may be the cause of painful joints or muscles and ligaments, or an iritis, or an exhaustion syndrome with anemia, in the advanced case.

The infection in the prostate may be secondary to tonsillar or dental infection and is transmitted through the blood stream—remaining in the prostate as a latent focus, from which it infects distant joints or organs. This spread from the prostate is usually intermittent, being activated by a lowered resistance or by local irritation. Such a condition may exist for years. When discovered, and treatment is begun, the distal symptoms are often temporarily aggravated—just as the removal of a chronic infected tooth will make a person temporarily worse; this result can be of diagnostic importance. We may have a bacterial prostatitis without the presence of pus in the secretion, yet enough to cause distinct symptoms; in fact, until pus appears, the symptoms may continue. To determine such bacterial prostatitis, repeated massage after irrigating the urethra is required.

Von Lackum, who made intensive studies of this condition at the Mayo Clinic, found that approximately one-half of the cases of prostatitis under his observation were due to dental or tonsillar infection, and other distant foci. He found the most frequent organisms present were: the streptococcus in 35 per cent, staphylococcus 22 per cent, with about one-third of the cultures sterile.

One should always consider the prostate as a possible focus of infection in arthritis, neuralgia, iritis and general debility, even though there are no typical genito-urinary symptoms present.

How can this state of the gland be determined? First by palpation. Often the gland is firm, edematous, and enlarged. It may be of a hardness suggesting malignancy, or it may be soft and flabby. One must gently but thoroughly massage such a gland and catch the prostatic fluid expressed through the urethra. This should be examined microscopically for pus, red blood cells and bacteria. If the gland is under suspicion and one does not get an increase of pus cells, then a provocative injection of a mild silver nitrate solution should be made, and the massage

\*Read before the Southern Minnesota Medical Association, Mankato, Minnesota, August 25, 1930.



repeated a couple of days later. One may then find an increase of pus cells with bacteria, which were absent at the first test. Sometimes repeated massage must be made to determine the extent of the infection present; most cases will show pus cells at the first examination, however. A clearing up of symptoms during treatment will show the probable causative relation between the two. It is surprising in many cases of this type of chronic prostatic infection how prompt and far-reaching may be the result of treatment. Patients who for years were unable to turn in bed or to stoop, will find prompt relief; patients who have been bedridden for months and even years, because of arthritic changes, may be made to walk and again become economically independent; patients mistakenly labeled as psycho-neurotics have been returned to useful, normal life by attention to a diseased chronic prostate. It is not our purpose to go into further details as to treatment, but only to call attention to such an entity of disease for which we should be on the lookout in any routine examination; on the other hand, we should not make a fetish of the prostate, nor ever neglect proper differential diagnosis.

The other prostatic condition which should never be overlooked in a general examination, is that of hypertrophy or obstruction, whether due to adenoma, carcinoma, or an inflammatory condition. The examining finger in the rectum will often determine this, or a history of frequency, especially if nycturia is present, difficulty in voiding, and residual urine; 100 c.c. of residual urine is always an indication of a serious condition present, or threatening. One should differentiate the possible underlying causes, so as to institute proper treatment before serious vascular or renal damage is done.

Removal of the obstruction before serious damage is done, quickly returns a patient to a comfortable and useful life. Neglect of early diagnosis and proper treatment, on the other hand, is what develops morbidity and mortality. Residual urine is at once an indication for a blood chemistry to determine the functional capacity, or possible degenerative process going on in the kidneys.

Examination of eye-grounds for certain retinal vascular changes may reveal evidence of cardiovascular renal disease; a chemically normal urine, under such circumstances, would be suggestive of obstruction, rather than primary ne-

phritis. The story is told of an oculist, who during routine examination of a patient's eye-grounds, made a diagnosis of hypertrophied prostate, the urine being practically normal to routine laboratory tests, but the characteristic retinal changes of renal degenerative damage being found. Looking into a patient's eyes and telling him he has a large prostate may be rather startling to the patient, and seem like a trick diagnosis, but can be explained by a logical sequence of physiological pathology.

If an obstructive condition is present in the bladder neck, one must determine the nature of the obstruction. This requires urethroscopy and cystoscopy. While this is in the province of the specialist, yet every practitioner should know of the methods required to arrive at a proper differential diagnosis in order to outline a method of procedure to the patient.

A patient of advanced age with nausea and vomiting may have uremia due to degenerative changes following bladder obstruction. Loss of weight and anemia may give the impression of gastric malignancy in this picture, and should be differentiated.

A cystogram often gives a clue as to bladder deformity or ureteral stasis and dilatation; a blood chemistry tells us how much retention there is of substances which should be eliminated normally; while the estimation of phenolsulphonephthalein gives a clue as to the renal capacity for excretion.

Thus early recognition of an enlarged obstructing prostate and prevention of infection of the bladder and secondary pyelonephritis with renal degeneration is worth while. It is more important to recognize the presence of a benign prostatic tumor than a malignant one, because there is a chance to help the patient with the former, and usually not with the latter case.

In conclusion, while it is not the purpose of this communication to go into detailed discussion of differential diagnosis, nor to discuss the treatment of these two conditions, namely, chronic prostatitis of non-venereal origin, and obstructing adenoma of the prostate, yet it is our wish to emphatically call attention to these two conditions in all routine examinations of adult male patients. Elaborate paraphernalia are not required, but a digital examination of the rectum can always be made and will rather frequently lead to an early diagnosis at a time when it will benefit the patient.

## ACUTE DILATATION OF THE STOMACH\*

JAMES MORROW, M.D.

*Austin, Minnesota*

EVERY abdominal operation, and probably most other operations, where there has been either direct or indirect stimulation of visceral afferent nerves is followed by varying degrees of gastric relaxation. It is true of any condition, that the more we are interested in it, the more prone we are to recognize its beginnings and to become more watchful for its occurrence and its course. Gastric relaxation therefore may be present, but unless it should progress to a point of acute dilatation of the stomach, might not be recognized; but, the dilatation having occurred, a vivid picture presents itself. Yet no one cause alone will produce this picture; an anesthesia may or may not have been a predisposing cause: reflex stimulation may be aggravated by mechanical obstruction, and yet the risk is so great that we feel that it may well be worth while to consider this condition.

Two views are held as to the causation of acute dilatation of the stomach: either a marked inhibition of the vagus or an over-stimulation of the sympathetic, or strangulation or compression of the duodenum. The weight of both experimental and clinical evidence favors the first theory. It is not an uncommon occurrence to note relaxation of the gastric walls during the laparotomies when viscera are handled, such relaxation being due to a reflex nervous stimulation.

Experimentally, however, section of both vagus nerves above the diaphragm has not produced an acute dilatation with adverse symptoms, though relaxation of the stomach walls has occurred. The loss of tonus in the gastric musculature, regardless of its cause, will be the predominating factor. There is sufficient evidence to show that both ether and chloroform anesthesia reduce gastric tonus, and this must be considered as a contributing factor.

The question of an associated obstruction to the duodenum is distinctly a matter of controversy. It should be considered as a result of the dilatation and not a causative factor. Obstruction of the duodenum will not of itself produce

an acutely dilated stomach. It is true that at postmortem examinations, in nearly every case of dilated stomach, some obstruction of the duodenum will be found. But careful examination will show that the degree is not sufficient to be a causative factor of the dilatation. For a very small degree of duodenal occlusion may produce a rapidly fatal toxemia; even an obstructive condition in the jejunum or ileum which will produce no symptoms, may, in the same degree in the duodenum, be fatal. This can be explained by the fact that the duodenum is capable of practically no distention and the fact that its nutrient vessels are arranged parallel to the long axis and that any degree of distention may result in an immediate circulatory damage.

The consensus of experimental and clinical evidence would therefore be that, in its etiology, an acute dilatation of the stomach would follow first a gastric relaxation and loss of tonus, reflex in origin, and that then a secondary mechanical occlusion of the duodenum follows either by direct pressure of the dilated stomach on the duodenum in its passage over the spine, or by an arterio-mesenteric compression brought about by the downward pressure of the dilated stomach. The important factor in the duodenal occlusion is the genesis of the toxic symptoms associated with this condition.

When the condition has actually developed, the symptoms are vividly present. As a rule, these symptoms do not present themselves till the third day, but even prior to then, certain consistent factors have been noticed which we feel are of importance. Even noticeable within twenty-four hours following operation, is the apprehension of the patient of a constant distress in the upper left quadrant. The pulse will increase even with a normal or subnormal temperature. There will be, with the use of enemata, passage of flatus from the bowel without relief of the upper abdominal distress. Examination at this time will show no fluctuation, but a marked tympanitic note may be observed over a large area of the upper abdomen. Passage of a stomach tube at this time will give immediate relief, and the strik-

\*Read before the Southern Minnesota Medical Association, Mankato, Minnesota, August 25, 1930.

ing fact is that this primary distention is due, not to any fluid content of the stomach, but is due entirely to distention with gas. Only mild, if any, toxic symptoms, are present. In most cases, with judicious after-treatment, no recurrence of the symptoms will occur. In cases when these first observations cannot be made, and in those cases which progress even after the above treatment has been instigated, the symptoms are an enormous accumulation of fluid in the stomach and the toxic phenomena of prostration, dehydration and collapse.

The enormous amount of fluid which the stomach contains is the most apparent feature. This amount, in one of our cases, was nearly seventeen liters in a twenty-four-hour period. Nearly three liters were obtained at one time in another case. These amounts were far in excess of the fluid intake. This fluid has as a rule no sour odor, is fairly clear and usually has a yellow tinge. In only one of the cases, as tabulated later, was there any free hydrochloric acid present, but bile was present in every case, and fecal material present only in one case. Probably this fluid contains also duodenal secretions and pancreatic juices. It is hard to conceive that this enormous amount of fluid can be the normal output of the gastric glands, and must be the result of a profound stimulation, which stimulation comes probably from a chemical basis brought about by substances produced as secretive bodies from the duodenal mucosa. Such an amount of fluid entering the stomach naturally results in a generalized dehydration, evidenced by scanty urine of high specific gravity, albumin and later the appearance of granular casts, and the further symptom of extreme thirst that the patient presents. The pulse grows more thready and rapid, and the picture in the case progressing fatally is

one of collapse. Such symptoms, together with the distended abdomen more marked on the left, the prompt relief of this distention following gastric lavage, leaves no doubt as to the diagnosis.

Only rarely can the diagnosis be confused. Peritonitis and postoperative ileus are the two conditions stimulated, but the lack of fever, the lack of a varying leukocytosis, the fact that in peritonitis the abdomen presents a more generalized tenderness and rigidity and is more diffusely distended, and the usual lack of fecal vomiting should rule out a peritonitis. Postoperative ileus usually involves the small bowel further down in its course, is not as early in its onset, and pain is a more prominent feature. Moreover, neither of these conditions responds immediately, as does a dilated stomach, to gastric lavage or to postural treatment.

The occurrence of an acutely dilated stomach in a definite form has been observed by us during the last few years in ten cases. These are tabulated below as an indication of the variations in which it has developed. A fact that has impressed itself on us is that in no case of operation on the stomach itself did there develop an acute dilatation.

Of the fatal cases, the first was a cesarean section performed for an eclampsia. The toxic symptoms were most marked, and were surely aggravated by the pre-existing eclampsia. Death occurred on the seventh day. Autopsy showed only an enormously dilated stomach filling nearly the entire abdomen (gastric lavage five hours prior to death), with a thin stomach wall. A definite angulation in the upper right quadrant gave the resemblance of duodenal occlusion, but this occlusion could very readily be overcome by the finger passing through the pylorus and duo-

GASTRIC DILATATION\*

Case Number	Operation	Anesthetic	Onset	Bile	Free HCl	Fecal Vomiting	Albuminuria	Casts	Outcome
1	Inguinal hernia	local infiltration	60 hours	X	O	O	X	O	recovery
2	Appendectomy	ether	48 hours	X	O	O	X	X	recovery
3	Cesarean section	ether	72 hours	X	O	O	X	X	death
4	Tetanus	none	8 days	X	O	O	X	X	recovery
5	Cholecystectomy	ether	60 hours	X	O	O	X	O	recovery
6	Appendectomy	ether and gas	12 hours	X	O	O	X	O	recovery
7	Intestinal obstruction	ether	72 hours	X	3%	X	X	X	death
8	Fractured femur (plaster cast)	ether	12 hours	X	O	O	X	O	recovery
9	Hysterectomy	Spinocain	60 hours	X	O	O	X	O	recovery
10	Lipoma (thigh)	Novocain and sod. iso-amylal	7 hours	X	O	O	X	X	recovery

\*Cases from records of Drs. Leck and Morrow.

denum. The case of intestinal obstruction which terminated fatally might be considered only as an obstruction were it not for the enormous amounts of fluids evacuated from the stomach. Unfortunately no autopsy was allowed.

I have referred at various times to gastric lavage. It is hard for me to mention acute dilatation of the stomach without a nearly coincidental thought of lavage, for of all the remedies proposed for the relief of this condition, it has been the only one consistently beneficial. And it is our impression that it is repeated lavage, at regular four-hour intervals, that is the deciding factor in the ultimate outcome. While I distinctly advocate lavage as the most important therapeutic method, it does not mean that additional methods should not be employed. The elevation of the pelvis to reduce the downward pull of the overloaded stomach; knee-chest position if practical; the use of small doses of surgical pituitrin—are all to be employed. In combating the toxemia, nothing is more beneficial than intravenous injections of 500 c.c. of a normal saline solution every four hours (our procedure is to give the saline after every lavage). Not only is the dehydration lessened by these intravenous injections, but blood chlorides are restored to the circulation, and a suppression of urine is guarded against.

The use of the duodenal tube in our experience has not been satisfactory. I think it probable that we do not get adequate duodenal drainage, because of the position of the stomach. Certainly there is not diminution in the toxic phenomena even though the duodenal tube is left in constantly, which shows that the toxic secretions are not withdrawn through the duodenal tube. Neither has the use of a small tube in the stomach, with constant syphonage, been as beneficial as active gastric lavage at regular intervals. While we have tried the procedure in only one case, there was absolutely no effect in relieving an acutely dilated stomach with the use of spinal anesthesia, though an intestinal non-mechanical obstruction can be frequently promptly relieved by this method. Surgery has no place in the relief of this condition, as a glance at mortality rates following surgical intervention will clearly show.

In conclusion, we may consider acute dilatation of the stomach an emergency condition demanding prompt and efficient treatment. Its occurrence may be anticipated at any time for it is not peculiar to any operation or to any anesthetic, and the reward of vigilance will be the lessening of what, up to recent years, has been an appalling mortality.

#### THYMOPHYSIN

Thymophysin is a foreign proprietary preparation of posterior pituitary and thymus claimed to be an oxytocic to accelerate normal delivery. In German periodicals, many articles have appeared praising the virtues of this mixture for use in the first and second stages of labor. Even in America a number of favorable but uncritical articles have been published. Erwin E. Nelson, of the University of Michigan, has reviewed the literature and carried out experimental investigations. He points out that the literature reveals no controlled evidence that the oxytocic or pressor activities of pituitary is altered by the addition of thymus extract. From his experimental work it appeared that, in this country at least, Thymophysin is incorrectly labeled as to its strength

and no difference could be ascertained in the oxytocic or pressor activity of pituitary extract as compared with pituitary plus thymus extract. Nelson believes that the clinical results obtained from Thymophysin can be explained completely as due to small doses of pituitary extract. Thymophysin illustrates again the pitfalls awaiting those who are not thoroughly competent to undertake clinical evaluations but who arrive at conclusions based on the use of material the composition and activity of which have not first been scientifically determined. If physicians wish to undertake experimental clinical investigations with drugs, they will save time and protect the interest of the patient by limiting themselves to drugs whose chemistry and pharmacology have first been studied by the Council on Pharmacy and Chemistry. (Jour. A. M. A., January 31, 1931, p. 359.)



## NON-MYXEDEMATOUS HYPOTHYROIDISM\*

CHARLES N. HENSEL, M.D., F.A.C.P.

*Saint Paul*

TO those physicians living in the Great Lakes basin, diseases of the thyroid gland bulk large. That many individuals in this district suffer from an over-activity of the thyroid gland—hyperthyroidism—a voluminous literature and numerous “collar scars” amply testify. That there are many individuals in this district not obviously affected by under-activity of the thyroid gland—hypothyroidism—is not generally recognized. Unless an individual presents myxedematous changes in the skin and subcutaneous tissues with mental and physical torpor and increased body weight, hypothyroidism is seldom suspected. That there may be under-functioning of the thyroid gland without any of the above signs, will be a surprise to many physicians—because the belief still exists that under-functioning of the thyroid gland and the myxedematous syndrome are synonymous.

This is not strange when we realize how we have acquired our knowledge of myxedema. In the year 1875, Wm. Gull reported five cases, “characterized by swelling of the skin, and more or less complete apathy”—under the title “A cretinoid state supervening in the adult life of woman.”

In 1877, Wm. Ord published six cases which he called “myxedema” on account of the edematous infiltration of the skin. In 1877—the same year—Charcot published similar cases which he designated as “cachexia pachydermique.” In 1880, Savage reported on the first case of myxedema in the male. In 1880, Madden noted that in the myxedematous state atrophy of the thyroid gland was constantly present, but drew no deductions from this analogy.

About the same time, Kocher, of Berne, and Reverdin, of Geneva, independently reported on results following the total removal of the thyroid gland for goiter. They found a syndrome similar to that described by Gull and Ord, but surgically produced, and Kocher designated the condition, “cachexia strumiprevia.” In 1884, an English commission appointed to study the etiology of myxedema, concluded that the only lesion con-

stantly found in the disease was thyroid atrophy. “Without lesions or absence of the thyroid gland—no myxedema,” said Kocher. Since that date myxedema and hypothyroidism have become synonymous and the belief is still general that you cannot have hypothyroidism without the myxedematous syndrome. But remember that myxedema is not a disease, but merely a sign in the skin and subcutaneous tissues as a result of hypothyroid function.

This sign was described in its relation to thyroid atrophy before we had any knowledge of direct or indirect metabolimetry. Since the perfection of indirect metabolimetry, hypothyroid states have been encountered as evidenced by reduced metabolic rates but without signs of myxedema.

At first physicians paid no attention to these low rates because no infiltration of the skin was present, but gradually it came to be recognized that, just as with kidney disease, there could be reduced kidney function without edema, so there could be thyroid disease—thyroid insufficiency without myxedema. Under this influence a budding literature is slowly growing up in which the condition under discussion is cautiously referred to as masked or occult hypothyroidism, mild hypothyroidism, small hypothyroidism, larval hypothyroidism, etc.

This caution obviously exists because the symptoms are largely subjective and the main reliance must be placed on the symptoms, plus lowered basal metabolic rates and response to thyroid opotherapy. These writers recognize the dangers of such types of diagnosis, especially in this day of ultra-scientific medicine when the clinical art ranks less than the laboratory science, in diagnosis and treatment.

Mention is made of hypopituitarism in which there is a somewhat lowered basal metabolic rate, asthenia, prolongation of the menstrual interval and sometimes urinary changes of hypo-suprarenalism with its intermittent asthenia, vasomotor instability, tremors, hypotension and failure to respond adequately to thyroid therapy.

If we can bear these two possibilities in mind and recall that they are relatively uncommon

\*Read before the Southern Minnesota Medical Association, Mankato, August 25, 1930.

(about 15 per cent each, in a large series of cases), then we can keep our feet on the ground, tentatively diagnose non-mixedematous hypothyroid states from the symptoms, confirm the diagnosis by the reduced metabolism and clinch the diagnosis by the response to treatment.

*Etiology.*—Infections seem to play an important role. Roger and Garnier, in 1900, examined critically the thyroid gland in forty patients, dead of various infectious diseases, namely, measles, scarlet fever, diphtheria, small-pox, acute gastro-enteritis, typhoid fever, cerebro-spinal meningitis and peritonitis. In nearly every case they found histological changes, such as diffuse hemorrhage, epithelial proliferation, swollen cellular protoplasm, poorly stained, cellular desquamation, with colloid thin or absent but very little change in the interstitial connective tissue. Quite obviously the infectious process had its chief effect on the secretory portion of the gland and their conclusions were that "infectious processes (after a period of functional stimulation leading to hyperthyroid symptoms) injured the thyroid gland and might eventually produce a more or less complete functional inhibition—hence hypothyroidism."

They postulate the fact that certain individuals have barely enough thyroid secretion to meet the ordinary physiological demands, but that as soon as their gland is overtaxed either through strain or by the toxins of infection, hypothyroidism develops.

Hypothyroid symptoms may occur at any time in life but are particularly common at certain ages and under certain conditions, namely, at puberty, at the menopause, during and following pregnancy, in the convalescent period following infectious diseases (notably influenza), and occasionally following extensive thyroidectomy for large degenerating adenomatous goiters.

*Symptomatology.*—The symptoms are bizarre. The chief outstanding complaint is fatigability, lack of "pep," no endurance, being tired all the time. These patients find it difficult to keep up with their daily tasks without becoming "all in." A night's sleep does not refresh them, they awaken tired in the morning, may work up towards a peak of energy sometime through the day, but this does not hold and their energy sags by night.

Some complain of daytime drowsiness; others, due to lack of energy, become mentally depressed. They suffer at times from severe head-

aches, hard to relieve by anything but rest, and are prone to generalized indefinite bodily aches and pains. Constipation may be extreme, menstruation may be excessive, and there may be lack of sex urge and sterility. Many note sensitiveness to cold, need extra bedclothes at night though they want plenty of fresh air in the room, want the temperature of the house 76 to 78 degrees and constantly have cold hands and feet.

None complain of dry skin or thinning of the hair; in fact in some of the most outstanding cases the skin is very fine, white and elastic. There is no constant physical type—all statures and body weights were represented. Out of fifty-six cases recently collected, twenty-four were of the lean slender type definitely below normal in weight, twenty-two were of normal weight and ten were over-weight. This point should be stressed, as the impression is current that hypothyroidism does not occur in thin people.

*Physical Signs.*—The general physical examination of these patients usually reveals very little. Many of them are alert mentally,—executives, salesmen, school teachers, students. Some show moderate swelling of the thyroid gland. In others a very small gland is just barely palpable or no gland at all can be felt. The pulse is usually slow (56 to 72), and the heart tones are frequently feeble or faint and distant with an occasional soft circumscribed systolic murmur over the apex.

Blood pressures are usually reduced from 116 systolic to 98 to 95 systolic, with diastolics between 80 and 60. Occasionally a patient will be below weight, show a swelling of the thyroid and have a tremor and an accelerated pulse, suggesting a possible hyperthyroidism. The blood may show a mild chlorotic anemia, but this is not at all characteristic. In fact, there are no symptoms entirely characteristic of hypothyroidism.

The one outstanding complaint is invariably undue fatigability. The one constant finding is a lowered metabolic rate. There is a wide range of variability in the degree of reduction of the metabolic rates, the readings ranging from minus 13 to minus 33 per cent, but showing no correlation between the degree of reduction and the intensity of the symptoms.

It was thought, following the postulates of Fahr in his cases of myxedema, which showed narrow Q.R.S. complexes and flattened T waves,

that the electrocardiogram might serve as an additional differential diagnostic aid, but all my cases showed only the normal variants in cardiographic architecture, the Q.R.S. complexes being of good height and the T waves normal—occasionally high.

*Differential Diagnosis.*—When a patient complains of undue fatigability for months or years, headaches, generalized muscular pains, possibly constipation and susceptibility to cold, yet does not look particularly sick, is on a normal diet and yet does not gain weight but may even be thin, and on physical examination little else can be found but a slow pulse, low blood pressure, subnormal temperature and occult tuberculosis and cancer can be ruled out, and his basal metabolic rate is minus 10 per cent, or lower, and we can rule out hypopituitarism and hyposuprarenalism, then I think we are justified in making a diagnosis of non-myxedematous hypothyroidism and instituting treatment with thyroid gland substance or desiccated extract.

*Treatment.*—Treatment should be begun with small doses of thyroid gland to try out the patient's tolerance and to slowly raise the metabolism, remembering that the thyroid gland is a regulator of combustion in the body and with increased activity there is an increased combustion and possibly an accumulation of waste products faster than they can be eliminated. This may result in headache and general malaise. Also the thyroid increases the work of the heart more rapidly than its tone, so that sometimes pain and insufficiency develop. This is especially true if the patient is elderly.

If you use the dried fresh gland, the maintenance dose is on the average from three to five grains daily, while if you use the desiccated extract, the dosage is less, being one to two grains daily. Get to know one preparation and what it will do and stick to that brand and check the patient's metabolism at frequent intervals until you have found the proper maintenance dose that keeps him up to normal efficiency without producing symptoms of thyroidism. The thin hypothyroid will gain weight and the obese hypo-

thyroid will lose weight, owing to the tendency of normal thyroid secretion to normalize metabolism.

At times it seems that following an acute respiratory infection such as bronchitis or influenza or tonsillitis, the hypothyroid patient on thyroid therapy may not show a normal convalescence, but may exhibit again signs of his original hypothyroid state to a moderate degree. Recheck of his metabolic rate will show an additional drop which necessitates, for the time being, an increased dosage of thyroid extract.

Therefore, it is important to watch these patients and check their metabolic rates from time to time. An occasional patient seems to have a regeneration of the thyroid gland under treatment and, ultimately, substitution therapy must be discontinued—otherwise thyroidism results. I have seen a female hypothyroid patient slightly overweight, in order to lose more weight, greatly increase on occasion the prescribed dose, of her own accord, producing thyroidism, namely, loss of weight, palpitation, nervousness, and insomnia. These symptoms have invariably subsided on the withdrawal of the drug, with no evidences of permanent constitutional damage.

I have watched all my patients on thyroid medication very carefully and so far have not had one develop goiter or signs of toxicity other than the one case above described.

#### BIBLIOGRAPHY

1. Bridges: *Med. Clinics N. A.*, Sept., 1928.
2. Cole and Womak: *Jour. A. M. A.*, Feb. 9, 1929.
3. Crotti: *Thyroid and Thymus* in 1922, p. 199.
4. Koehler, E. E.: *Am. Clin. Med.*, Jan., 1927.
5. Koehler, A. E.: *Trans. A. M. A. Practice med.*, p. 188.
6. Lawrence, C. H.: *Med. Clinics N. A.*, May, 1925.
7. Lawrence, C. H.: *Boston Med. and Surg. Jour.*; January 13, 1927, Vol. 196, No. 2, p. 43, p. 377.
8. Lawrence and Rowe: *Endocrinology*, Vol. XII, No. 4, July-Aug., 1928, p. 773.
9. McKenzie, G. M.: *Jour. A. M. A.*, 86-462-4, Feb. 13, 1926.
10. McLester, Jas.: *Clinics N. A.*, March, 1929.
11. Warfield, L. M.: *Am. Clin. Med.*, 1928.
12. Womak: *Endocrinology*, Vol. XII, No. 6, Nov.-Dec., 1928.

## MEDICAL PIONEERS OF MINNESOTA\*

WILLIAM J. MAYO, M.D.  
*Rochester, Minnesota*

DR. GEORGE E. DE SCHWEINITZ, the dean of American ophthalmologists, who was president of the American Medical Association in 1922-23, speaking of the advice which should be given to a young man starting out in life, said, "When I went away to college, my father saw me off at the train and said to me, 'George, I am not going to give you a lot of advice, but I want you to remember that you come from respectable people.'" The more one thinks about this brief counsel relative to the forming of character, the more one is impressed with its true significance.

We, who are here today, must be impressed with the fact that we are members of a respectable profession, made respectable by the pioneer physicians who have gone on before. In the early days medical men of courage and vision came to Minnesota with other valiant pioneers, to face the hardships of frontier life. The great test of courage in those who preceded us in Minnesota was contact with the most intelligent, the most courageous and the most warlike of the American Indians, the Sioux. Who here has not read the Leather Stocking Tales of Fenimore Cooper: The Last of the Mohicans, The Deerslayer, The Pathfinder? As a boy I always pictured these romantic stories in relation to the Minnesota Valley.

My father came to Minnesota in 1854. He was the medical officer with the Territorial Survey which laid out the northern counties of the state. When St. Louis County was surveyed, there were few inhabitants in that vast territory. At Rice Point, near where Duluth now stands, there was one cabin, but the trapper who lived there was away, and therefore Father was made temporary chairman of the first board of county commissioners, an office which he held for about six weeks, until someone who lived in the county could be found to take his place. In 1856 Father moved to Le Sueur, on the Minnesota River, the head of navigation, to practice his profession. At that time one little boat plied irregularly up and down between Le Sueur and St. Paul. When the Civil War broke out, Father was one of the

United States Medical Examiners, and in 1862, when the great Indian outbreak took place, he was with the small detachment of soldiers and men who went to New Ulm to repel the Indians. They told the story afterward that during the siege Father had just completed an amputation of a leg for gangrene, when, looking out of the improvised operating room, he saw two of the undisciplined guards, who had been instructed to remain at a post of observation, sneaking back into the settlement. He started after them with the long amputating knife used in the early days, and turned them back to the line of duty.

With the men at the front, and only women and children left in Le Sueur, my mother organized the women to represent a company of soldiers. She dressed them in men's clothing and armed them with pitchforks, and fence pickets to the top of which knives, forks, spoons or bits of tin had been fastened, which would glitter in the light and look like bayonets, and several times a day marched them in military formation about the settlement. The Indians, who were massacring settlers in every direction, seeing Le Sueur from the hills, believed that soldiers had come up on the boat as a guard, and did not attack.

At the close of the Indian uprising, when thirty-nine Indians were hung at Mankato, Father secured the body of Cut Nose, a huge Indian who, in some predatory expedition, had received a cut with a tomahawk through the edge of the forehead and face which almost severed the nose. Father cleaned and articulated the skeleton, and on this skeleton, under his instruction, my brother and I, as small boys, learned our osteology.

Early in 1863 Father was sent to Rochester as United States Medical Provost-marshal to entrain troops. The railroad had just come to that vicinity.

I mention these incidents because of the influence that they had on my brother and me in fixing the Minnesota Valley in our youthful minds as a field of romantic adventure, and the romance of those early years remains with us to this day.

\*Talk before the banquet of the Southern Minnesota Medical Association, Mankato, Minnesota, August 25, 1930.



The Minnesota State Medical Association was organized in 1869. My father was one of the founders and its third president. The Minnesota Valley Medical Association, which was next in size, was organized December 1, 1880, at Le Sueur. In the previous October a number of physicians of Le Sueur County had met at Le Sueur Center and had partially organized a medical association and named it the Minnesota Valley Medical Association. Dr. Otis Ayer, Le Sueur; Dr. C. F. Warner, Mankato; Dr. A. W. Daniels, St. Peter; Dr. Alfred Muller, New Ulm; Dr. G. F. Merritt, St. Peter; Dr. Z. G. Harrington and Dr. E. J. Davis, Mankato, with others, were members of this group.

Even while I was a student of medicine, I had the opportunity to attend with my father several meetings of the Minnesota Valley Medical Association, which were held yearly in Mankato, and there I had the privilege of seeing some of the medical pioneers. One of them in particular I can still see in my mental vision, Dr. Daniels of St. Peter, a cultured gentleman. It was inspiring to see a man of that type in pioneer surroundings. When on one occasion Dr. Daniels saw me at the meeting of the society with my father, he said, "So you are going to study medicine? Well, it is the most satisfactory of all the professions. It is doing for others. I have always been physically very well, and let me advise you that when you go into the practice of medicine and begin to go about the country seeing patients, be careful what you eat. I have found it wise to ask for a boiled egg, a baked potato, hot toast, and to drink tea or coffee, something that has been boiled and is still hot." Thus I learned from an observant man the knowledge that unclean food might be the cause of much sickness.

Dr. Alexander Stone, of St. Paul, was one of the finest speakers in the medical profession of the state of his time. Dr. Charles T. Wheaton, the surgical hero of my young professional life, a graduate of Harvard who had interned at the Boston City Hospital, was a very fine anatomist and a conscientious and most courageous surgeon.

Dr. James Dunn, of Shakopee, later of Minneapolis, and Professor of Surgery at the University of Minnesota, was the most learned surgeon of his time in the Northwest, I believe. He had

spent two years in Germany. He used to come down to see us at Rochester, and he was always cold. We would always build a fire in the grate, and he would drop into a chair in front of the fire, resting apparently on the back of his neck, stretch out his long, thin legs to the blaze, and become reminiscent. On one of his trips back from New York, he stopped with us for a few days, as he often did. I was very much interested to know what of interest he had seen on his visit, and asked him. He said he had seen many things. "The funny thing about it is that when I get off and see things, I make up my mind that I am going to do them, and when I come home, I find myself sliding back into the old ways I have always used and have confidence in." He went on to say, "My wife and I go every year to New Hampshire to a lake where a farmer has some cottages. When we were younger, we enjoyed the rough living, but as we have grown older and more sophisticated, we should like more conveniences. We and some of the others who go to the lake regularly decided to take up a collection and send the old man away to see resorts elsewhere. We did not want to ask him to make changes for our benefit, but we thought if he saw what other places were doing, he would want to do the same. When he returned from his trip, we all met him at the boat. He got off full of enthusiasm. 'Boys, I have seen them all, Newport, Atlantic City, and, do you know, this is the only place they have seven different kinds of pie for breakfast?'"

I remember well Dr. N. S. Teft of Plainview, with dangling lower extremities, crippled by infantile paralysis, carrying his heavy body around on crutches, doing country practice. Nothing was allowed to interfere with his work. He would start off through the snow in winter, and if he did not return at a certain time the livery man would take a team and go to find him. Perhaps he would be in a snow drift; hardly able to blanket his horse, and waiting down under the robes for rescue.

The Southern Minnesota Medical Association was organized July 28, 1892, with a membership largely from the southeastern part of the state. Of the leaders in this group, I remember Dr. Franklin Staples and Dr. J. B. McGaughey of Winona, Dr. Charles Hill of Pine Island. Drs.

W. H. Lincoln and W. F. Milligan of Wabasha, and Drs. E. C. and E. W. Cross and W. W. Mayo of Rochester.

It was decided after many years of success that the Southern Minnesota Medical Association and the Minnesota Valley Medical Association should combine in order to extend the membership into the southwestern part of the state. This was done willingly, but nevertheless with great sorrow by the old pioneers of the Minnesota Valley Association.

It is to these pioneers that we owe the splendid position the Minnesota medical profession now occupies. Early in the 80's an enactment was brought through the Legislature which did much to keep out medical chaff from Minnesota. This law was fairly well enforced and has been

improved on at various times, until today the Basic Science Act does much without prejudice to keep the profession of the state clean.

The pioneer medical profession of Minnesota, part and parcel, exemplified character and courage. Especially let me dwell on courage. Minnesota in three great wars, the Civil War, the Spanish-American War, and the Great War, organized and sent to Washington the first volunteer regiment and in each and all of these wars sent a larger percentage of volunteers in proportion to the population than any other state in the union.

Let us rise for a moment in silent homage to the medical pioneers who have made Minnesota so respectable a place in which to practice medicine.

#### RENTON'S HYDROCIN TABLETS

Under the name "Renton's Rheumatic Tablets" the Renton Company of Pasadena, California, put out an alleged rheumatism cure a year or so ago, under the claim: "What insulin is doing for diabetes, Renton's Rheumatic Tablets are doing for arthritis, neuritis and rheumatism." After the preparation had been on the market for some time, the officials at Washington in charge of the enforcement of the Food and Drugs Act are said to have made the Renton Company eliminate the word "Rheumatic" from their labels and the nostrum became "Renton's Hydrocin Tablets." The A. M. A. Chemical Laboratory reports that each Renton's Rheumatic Tablet was found to contain essentially 0.32 Gm. (approximately 5 grains) of cinchopen, with a relatively small amount of an unidentified amine. The Laboratory reports that qualitative tests indicated Renton's Hydrocin Tablets to contain the same ingredients as found in Renton's Rheumatic Tablets, and that the amino compound present was identified as a

tetra-ethyl ammonium compound. Although the tablets were stated to be enteric coated, the Laboratory found that the coating flaked off when they were immersed in 0.2 per cent hydrochloric acid. Summed up, it appears that people who pay \$1.50 for fifty Renton's Hydrocin Tablets are getting what is essentially fifty five-grain cinchopen tablets, which could be purchased at almost any drug store at half the price, and, what is of more importance, with the possibility of the dangers and limitations of the drug known. With the increasing number of cases of acute yellow atrophy of the liver following the continued use of cinchopen it seems little less than criminal that irresponsible "patent medicine" exploiters should continue to put this potent drug into their secret mixtures, with no warning as to the possible dangers in its continued use. Nor are the large and supposedly respectable pharmaceutical houses, which put up such formulas for "patent medicine" manufacturers, free from moral responsibility. (Jour. A. M. A., January 17, 1931, p. 209.)

## THE ART OF MEDICINE\*

WALTER C. ALVAREZ, M.D.  
Rochester, Minnesota

LOOKING back over the years can you not, every one of you here tonight, remember some of your classmates in college who were good students and who could turn in excellent examination papers but who, when they went out to practice, somehow or other failed to achieve what is commonly known as success. You will remember also some very poor students who perhaps flunked out and later succeeded in getting through a diploma mill and somehow past a state board and who are now staggering under the burden of an enormous practice.

Now it is true that some of the men who could not or would not study at college did buckle down when brought face to face with the needs of their patients, and they did learn something about the science of medicine and surgery, but this is not the explanation for the success of many of the others. I have met some of them in consultation and have always come away wondering how anyone could have been "exposed" to so large a mass of clinical material without learning something from it about the nature of disease. I remember once going with one of these men into a room where I needed but one look to tell me that the fat cyanotic ex-brewer who lay propped up in bed was in the last stages of terminal pneumonia. When I stepped into the next room and told my colleague what he was up against I was astounded to find that he hadn't even suspected that the lungs might be involved. In order to get a diagnosis he had sent some urine and blood to a commercial laboratory, and when the report came back that the man had nephritis, well, nephritis it was until the family became alarmed enough to ask for a consultation.

*A remarkable practitioner.*—I have often tried to analyze the reasons for the success of the most remarkable of all these poorly educated physicians whom I have known, a man who, while working some forty years ago as a barber, went for a few months to a third rate college and there attended some lectures. With this excellent scien-

tific foundation, he hung out his shingle, and from then onward until a few years ago, when a stroke ended his career, he enjoyed what was probably the largest and most lucrative practice to be had in a certain large city of this land. The estate which he left was appraised, if I remember correctly, at well over a million dollars. I have several times met this man in consultation, and always on such occasions I have been surprised at his inability to read some of the plainest sign-posts of disease. Surely his success was not due to any skill in diagnosis. Well then, to what was it due? Most of you will doubtless expect me to say that it was due to the fact that he was a big, fine-looking, magnetic sort of man, well endowed with all that personal charm and that appearance of distinction which gives to certain men the prestige and power to command their fellows, to lead them, to influence them, and even to heal them.

No, that was not it. He was an insignificant looking little man, barely five feet tall, and quite devoid of any charm of manner that I could detect. So far as I could see his success was due largely to three factors: first, his clever use of consultants to make his diagnoses and to shoulder responsibility when things went wrong; second, an ability to work hard twenty hours out of the twenty-four; and third, and I think most important of all, a canny knowledge of human nature and of much of the art of medicine.

I have often wished that some of my younger confreres in the medical profession, those who by refusing to accept consultations insist on keeping for themselves all the obloquy that can come from the loss by death of a prominent patient, could learn the lesson that this man might have taught them. Always, whenever he was concerned about a patient or whenever he sensed the least anxiety on the part of this patient or of his family he would immediately call in one or more, commonly more, of the best consultants he could get. The patient was usually much pleased over these signs of his own importance, the family was reassured and given much to brag about, and if later anything went wrong, it never

\*From the Division of Medicine, The Mayo Clinic, Rochester, Minnesota. Read before the Southern Minnesota Medical Association, Mankato, August 25, 1930.

occurred to them to lay the blame on their beloved family doctor.

Once the diagnosis was made and the treatment outlined, this wise old practitioner devoted himself to the task of making the patient comfortable. In this he spared no pains, and if the illness was severe and the family of the patient anxious he made at least three visits during the course of the day, the last one often on tip-toes at two in the morning. Good nurses were secured and no stone was left unturned to make the relatives feel that everything possible was being done.

It was remarkable, moreover, that with all his enormous practice, keeping two chauffeurs going from six o'clock in the morning to two or three o'clock the next morning, he often found time to call socially on his old patients. If for any reason there was rejoicing in a home—the promotion of a son to new honors, or the wedding of a daughter—he would drop in for a few minutes to hear about the details and to express his pleasure. He was, therefore, not only physician to hundreds of families but he was counselor and friend.

With the help of a few gossiping old ladies he kept in touch with everything that was happening among his clientele and he promptly responded to anything that might affect his interests. In his later years, when some of his younger patients began to recognize his scientific limitations and began to look elsewhere for medical advice, they had great difficulty in breaking away. When they consulted other physicians they did it furtively, not only because they hated to hurt their old friend, but because they did not dare to admit their defection to a mother or grandmother still much devoted to him. His was, I think, the most extreme example I have known, of a man who, without prestige of birth or breeding or education or physique, turned to tremendous account a knowledge of human nature and of the art of medicine.

*The need for art.*—Now I have not been telling you so much of this man's life and skill because I think it is so admirable or because I think a huge practice is to be desired above all things. Fortunate it is that there are many men in our profession who would refuse to give up everything worth while in life to the demands of such an inexorable treadmill. The reason why I have spent so much time talking about this man

is that I could not think of a better way in which to emphasize the importance to us all of the art of medicine. Surely if a man without any scientific training could, through art alone, walk off with the best practice in a large community, what might not those of us who possess some scientific skill do if in addition to this we were to develop a finer art. This art we must try to learn, not for any selfish reasons, not with the idea only of increasing our incomes, but with the idea of giving better service to our fellow men. One of the saddest thoughts that must daily come to the sanitarian is that in this modern world there are hundreds of thousands of men and women who, when ill, refuse to accept the help which modern scientific medicine and surgery could easily give them. Often as one talks to these persons one finds that their refusal to have anything more to do with the medical profession is due to the fact that once upon a time they or their relatives were much upset by the doings of some tactless or unfriendly physician.

Furthermore, what is the use of spending ten or twelve years and thousands of dollars in giving a young man a fine training in the science of medicine if when he goes out in the world his lack of knowledge of the art is going to make it impossible for him to get a practice and to use his science. A few years ago I happened to be where I could watch the career of a young man whose knowledge in a certain field of medicine was encyclopedic. His brilliant writings soon caused many patients to seek him out but somehow or other he never seemed to learn the rudiment of tact, of savoir-faire, or of medical art; those who consulted him soon left disgruntled, and as a result he took down his shingle, and became a full-time professor in a medical school!

All of which leads me to another thought which is that today medical students, even in our best colleges, are being more and more poorly trained in this art that I am talking about. The younger generation of medical teachers today are mainly interested in the biochemistry of serious disease; more and more of them are stepping directly from the laboratory into the professorial chair, and as a result there will be fewer and fewer with any knowledge of medicine as it is practiced in a downtown office, with patients from the middle and upper classes.

Fortunately, those at the head of some of the



leading schools in the country are now beginning to see the great need for correcting this defect and with good sense they are turning for help to the outstanding practitioners in their respective states, asking them either to give lectures or to act as preceptors so that the students can learn something about medical practice as it is actually being carried on out in the world. Unless this sort of thing is done, every year more and more students are going to graduate from even our best universities well equipped with information about the rarer diseases, which they will seldom encounter, and woefully unprepared to deal with the functional troubles which they will see several times a day. They will have learned much of the science of medicine but little if anything of the art.

*What is this art?*—But what is this art that I am now supposed to talk about? I should say that it is the knack of dealing with the patient in such a way as to gain his confidence, his respect, and his liking; it is the knack of inspiring him with the feeling that here at last is a man who understands his case and will cure him; it is the knack of keeping this trust even when things go wrong, when health and comfort do not return, and when, perhaps, as is the case with many illnesses, things continue to go from bad to worse; and it is the knack of making the patient comfortable and of adjusting the prescribed treatment to his particular idiosyncrasies of mind and body.

*Can this art be learned?*—Yes, most of it depends first on having a thorough knowledge of disease and this must be learned from books, or, better yet, from a careful study of patients; much of it can and must be learned by making mistakes and by profiting by them; some can be learned from teachers, but the ability to learn the art and to practice it depends largely on the student's original endowment of brain and heart, on his ability to like people, to get on with them, to understand them, to sympathize with them, and to be kindly with them. In other words, the ideal physician must be born. Probably in no other calling is there more need for good judgment, for good sense, and for the equanimity and poise and culture and charity of a philosopher.

The ideal physician can I think be fashioned most easily out of the type of man whom one commonly finds serving as the balance wheel of a large family: the relative to whom they all

turn for help and advice in time of trouble. Such men often possess a certain dignity and personal prestige that make it easy for them to lead and to command their fellows. Fortunate are they who have it, because daily they must give orders, often to those who are not accustomed to receive them, and daily they must give freely of their strength and vitality and hopefulness to those who are weak and frightened and discouraged.

Some physicians fail to obtain the type of practice which their scientific skill should have brought them because they are careless about their personal appearance. Others expect well-to-do patients to come hopefully to a dingy office, which looks antiquated and down-at-the-heel. They forget or perhaps never knew that in ages past medicine was practiced successfully with the help of the prestige that came from beautiful temples and an impressive ritual. Even today the prestige that comes from a tastefully but not too elaborately decorated suite of offices filled with well dressed patients is not to be despised.

*Taking the history.*—There is an art in putting the patient at ease when he or she first comes in, nervous and frightened, and perhaps ready for flight. Often the physician will do well to spend the first few minutes talking about some non-medical topic: one brought to mind perhaps by noting the name of the town from which the patient comes or the name of the friend or physician who referred him. With certain patients it is helpful to establish in this way some friendly contact before starting the quiz on medical matters.

The taking of a good history, which brings into play every bit of scientific knowledge which the physician has, will at the same time call upon him for the exercise of all his skill in the art. The taking of this history and the making of a thorough physical, roentgenologic, and laboratory examination constitutes the first and most important step in the psychic treatment of a nervous and worried patient. Unless the physician takes such a history—one which brings out the details of family and business worries, of domestic infelicity, or of phobias—he cannot expect to work a cure. Unless he obtains this information the patient will go away dissatisfied because, although he does not admit it, he knows in his heart that the real cause of his trouble has not been touched.

Many patients conceal the most important facts about their troubles. They will not volunteer the information that someone has recently diagnosed cancer or syphilis, and they will even deny the fact that at home there is bickering, unhappiness, and thought of divorce. A beautiful young Italian woman who came to The Mayo Clinic recently from Chicago complaining of constant headaches maintained stoutly that her home life was happy and that she had no worries. Only from a friend was I able to learn what I suspected; namely, that her husband was in the liquor racket and that she was living in hourly dread of his assassination.

Obviously a physician who is to practice the art of medicine must learn when to suspect that these important factors are present, and he must become skillful in making the reticent patient confess. I often do it by telling a story similar to the one I expect to get. The physician must also have a sixth sense to tell him when the patient is lying and he must watch keenly for tell-tale signs of emotion or hesitation as answers are being made to certain questions. Time and again I have been led directly to the cause of a neurosis by noting on a woman's face signs of pain as some question was answered, or by seeing her shoot a meaning glance at her husband.

After a long history has been written down it takes perhaps as much art as science to decide what is important and what is not. This is shown so clearly in those cases in which, after having been called for twenty years a "pure neuro," a woman is found to have a gallbladder full of stones. Often then, if the physician will go back over the history, knowing at last what is relevant and what irrelevant, he can pick out here and there symptoms which, when pieced together, tell the typical story of cholecystitis.

*What to say and not to say.*—The greatest need for art in medicine comes when one begins to talk to the patient about diagnosis and treatment. In many cases, of course, the problem is simple; the patient is intelligent, willing to accept what he is told, and willing to cooperate. The diagnosis is clear and there is little doubt as to what should be done. But in many of the cases seen in modern consultant practice the problem is very difficult. The patient, commonly a woman, perhaps psychopathic, suspicious, overly sensitive, spoiled, and somewhat of a tartar to begin with, has traveled so much, has been told

so many conflicting things, and has suffered so much at the hands of so many physicians that it is small wonder that when she goes to a new one she is on her guard, diffident, critical, and hard to influence.

In such cases the physician who is to succeed must, as he talks, watch the patient's face closely in the hope of sensing when he is saying the right thing and when the wrong. He must watch for every sign of emotion, interest, acquiescence, unbelief, antagonism, or annoyance that flits across the face of the person before him. If he sees that inadvertently he has given alarm, he must stop and reassure; if he has preached a little too pointedly and has caused resentment he must stop, to soften his words and to express sympathy; if he has failed to make things clear he must try again with simpler speech; if he is antagonizing the patient he must know it and must try another tack; or if the patient is becoming fatigued he must terminate the interview.

Although the importance of feeling one's way is perhaps greatest when one is talking to the patient in whom nothing organic has been found to explain the presence of trying symptoms, it may be great also even when the diagnosis is definite and positive. With certain patients it is no easy task to give a clear and impressive idea of the seriousness of the disorder and the need for prompt and thorough treatment without at the same time producing such alarm and resentment and unbelief that the patient will promptly leave to consult someone else. One of the worst things we physicians often do is to give from the start a hopeless prognosis. It rarely is necessary to do this; it is almost certain to destroy our further usefulness to the patient or his family; often we are wrong, and whether right or wrong, we will often lose the good will of a whole family.

We all know, also, the type of physician who when he sees what he thinks is organic abdominal disease will try immediately to rush the patient into the hospital for an emergency operation. Sometimes this maneuver works but often it does not, and then the physician is left to contemplate the fact that if he had had more art and more knowledge of human nature he would have seen in time that this particular patient could only be scared away by such tactics. I have often been told by patients that they would long before have accepted a needed operation if only the surgeon had taken the time and pains to explain in or-

dinary speech what he wished to do and why. Time and again I have seen Christian Scientists and other such persons who had sworn never to consent to an operation go cheerfully to the hospital after the mechanical nature of the problem involved had been explained to them, and after ample time had been given them in which to change their minds. In such cases I do not urge operation but explain the need for it and then let the idea work in gradually.

When one is talking to patients about certain serious and commonly fatal diseases there is an art also in avoiding the use of those words which are so closely bound up in their minds with the idea of hopeless suffering and death that they cannot bear to hear them used, especially when their hearts are full of anxiety and fear. I refer particularly to such words as cancer, epilepsy, Bright's disease, and consumption. If you wish to earn the undying gratitude of the harrowed and grief-stricken mother of an epileptic child, use if you will such terms as *petit mal* or "syndrome of meningitic irritation" or seizures, but never that dread word which will cut into her heart and brain like a knife. These may seem to be little things but many a time I have seen a patient change physicians on account of them.

One of the most devoted and grateful patients that I ever had was a man with an inoperable carcinoma of the stomach whom I tried to make fairly comfortable during the last few months of his life. I learned from his wife that they had left another physician because this man insisted on talking about cancer. The patient, like so many others with this disease, had metaphorically buried his head in the sand; like Moran of the Two Black Crows, he "didn't want to hear no more about it," and he was grateful to me because I treated him without ever a word about diagnosis or prognosis.

And this brings up the difficult problem of knowing how truthful to be with patients. Here again we often have need for all the art that we can summon to our help. If a man looks me in the eye and says, "What is the trouble?" I believe it is my moral and legal duty to tell him what it is even if it is inoperable cancer. But if, knowing in his heart what he has, or having been told by someone else, he comes at the instigation of his family and does not ask me any questions, what right have I to sear into his soul with terrible words? Often, also, when a patient

is trying to find out if his albuminuria means Bright's disease the wise physician will refuse to use this dread term, because he knows that, once he has done so, no amount of explaining will ever put across the idea that the lesion is probably dormant, that it is little more than an old scar, and that there is nothing to indicate that life will be shortened.

Perhaps most important of all, if the physician does not know what is wrong it is not his duty to poison the patient's mind by telling him that his symptoms are suggestive of such diseases as brain tumor, multiple sclerosis, locomotor ataxia, or pernicious anemia. Similarly if the first Wassermann report is one plus, it is not fair to tell the patient of this and perhaps to make of him or her an incurable syphilophobe. Why not wait a day or two to see if the next two reports will not come back marked negative? In other words, the wise physician who practices the art of medicine does not tell all he knows; he carries in his heart a large share of the burden of worry, and by so doing spares the patient much anxiety and himself much unnecessary argument.

The greatest need for careful speech comes often when one has to tell a seriously incapacitated patient that the complete examination has failed to reveal signs of organic disease. Here the physician needs all the tact, sympathy, and kindness that he can summon to his help. After reviewing the record and explaining that nothing has been found that would justify surgical intervention, I think it well to admit that, although this should occasion considerable rejoicing, it also has its disappointing side. I try to assure the patient of my confidence in the existence of his symptoms, and I remind him that many bodily functions can be upset in sensitive persons by strong emotion, worry, and fatigue.

If the patient has been overworking and losing a great deal of sleep, I picture to him thousands of delicate brain cells crying out for rest; I suggest that he give heed to their complaint, that he cut down on work, try a simpler diet and better methods of regulating the bowels, and see what happens. If everything clears up, we shall be happy; if some of the symptoms disappear and others remain or if new ones appear and others get worse, the correct diagnosis may either become obvious or another careful examination

may show what is wrong. One great advantage of this method is that I have not burned my bridges behind me. If things go wrong, if new symptoms develop and the diagnosis becomes obvious even to a tyro in medicine, I shall not be humiliated by having my mistake corrected, perhaps by some unfriendly critic, and I shall not have earned the contempt and enmity of the patient and his family.

I could go on perhaps for hours telling you about the art of adjusting a diet to the needs of

a fussy patient, the art of making certain persons eat more, the art of carrying out a successful rest cure, or the art of conducting a satisfactory consultation, but I think I have already made my point, which is that a knowledge of the art of medicine can greatly extend the usefulness of every skilful and scientific physician in the community; it will enable him to render better service to a greater number, and it will bring greater peace of mind and hope and comfort to his patients.

#### MISLEADING METHYL CHLORIDE PUBLICITY

The Committee on Poisonous Gases of the American Medical Association issued a report emphasizing the hazard arising from the use of methyl chloride in refrigerators. In the view of the committee it is more commendable to work toward the attainment of a non-hazardous refrigerant than toward the attainment of a usable warning agent. Nevertheless, chemical manufacturers have apparently been able to induce the Bureau of Mines to make studies of the properties of methyl chloride and methyl chloride to which has been added acrolein, an irritating warning agent. One of these concerns, the Roessler & Hasslacher Co., markets methyl chloride under the trade name of "Arctic" and Methyl Chloride A, which is pure "Arctic" plus 1 per cent of acrolein. A report of the Bureau of Mines appeared which was written in such a way as to lend itself to use as advertising copy by writers seeking to create favorable propaganda for commercial exploitation of methyl chloride. The report emphasized that methyl chloride exerts no deleterious effects on the contents of the refrigerator and implied that it is therefore of no importance whether or not methyl chloride escapes into the refrigerator. The major point—the hazard of escaping methyl chloride to occupants near the source of the leak—is not stressed. The Roessler & Hasslacher Chemical Company has used the report to create the impression that "Arctic" is a relatively harmless substance and the last word in efficient and safe refrigerants. It is unfortunate that a branch of the government, the Bureau of Mines, has been swayed to serve more the interests of chemical manufacturers than to serve the interests of the public. (Jour. A. M. A., January 24, 1931, p. 272.)

#### TREATMENT OF COUGH AFTER BRONCHITIS

Children who cough should not be permitted to attend school. If the child has fever, it should be kept in bed. Warmth, as uniform as possible, is the prime requisite in the treatment of colds and acute coughs. The chief of all expectorants is water: without it most medicinal expectorants fail and, with an abundance of it, they may not be required. Nevertheless, they probably contribute, when wisely used, to a speedier evolution of the various stages of bronchitis and to a more rapid recovery. The salines, chief among them ammonium chloride and sodium citrate, head the list of agents that may reasonably be expected to be of use in "loosening up" a cough, provided they are given freely, frequently and with plenty of fluid. Iodid, the most powerful of the saline expectorants, should not be employed until the acute stage is well over. When the cough is "loose," aromatics may be of value such as terpin hydrate and creosote. A cough that hangs on is not so much an indication for medicine as a challenge to determine why it does. (Jour. A. M. A., January 3, 1931, p. 61.)

#### ANTITOXINS AGAINST SCARLET FEVER

No "one-shot" method of active immunization against scarlet fever has proved effective. The present status of the "ricinoleated antigens" is that they are of unestablished value. Their therapeutic action has not been proved. Scarlet fever ricinoleated antigen has been distributed by only one concern and that concern has recently discontinued the manufacture and distribution of ricinoleated antigen and is recalling it from the market. (Jour. A. M. A., January 24, 1931, p. 292.)



## FIBROSARCOMA OF A MECKEL'S DIVERTICULUM PRODUCING INTESTINAL HEMORRHAGE\*

LOUIS S. FAUST, M.D., and WALTMAN WALTERS, M.D.  
*Rochester, Minnesota*

MECKEL'S diverticulum is found in from 2 to 3 per cent of the population, according to necropsy records, and, as is commonly known, is due to failure of the vitelline or omphalomesenteric duct with its accompanying vessels to become completely obliterated. It usually arises from the ileum about 90 cm. from the ileocecal valve, although rarely it may be found anywhere in the gastro-intestinal tract from the cardia to the rectum. It varies in size, from 2.5 to 10 cm. in length. Ordinarily the diverticulum is found on the antimesenteric border of the ileum but it may exist at any point on the circumference of the ileum and rarely between the leaves of the mesentery. Under the latter conditions, when it is of sufficient length, it may resemble an intestinal duplication. The vessels accompanying the vitelline duct may fail to become completely obliterated; they may persist as fibrous cords, and are found either hanging free from the tip of the diverticulum or attached to the abdominal wall at or near the navel or to the mesentery. The point of attachment of these congenital bands in the abdominal cavity is variable. These bands are important sources of intestinal obstruction and strangulation, as has been so clearly shown by Fitz. At times a separate mesentery is found connected with the diverticulum. Schaetz demonstrated gastric epithelium in Meckel's diverticula and has shown that this aberrant gastric mucosa may be the seat of ulceration similar to peptic ulcer.

That ulceration in a Meckel's diverticulum may result in massive intestinal hemorrhages with severe secondary anemia has been noted by a number of observers.<sup>1, 10, 12, 13, 15, 18</sup> From a survey of the literature, it would seem that most cases occur in infants or children. As in the duodenum or stomach, these ulcers may give rise to hemorrhage or perforation. Inflammatory changes not infrequently occur in the diverticulum.

Coley and others reported tuberculous ulcera-

tion of a Meckel's diverticulum and mentioned that typhoid perforation has occurred.

Invagination of Meckel's diverticulum with formation of intussusception may occur. Hertzler and Gibson, Shannon, and others reported such cases. Deformities about the umbilicus should suggest the presence of a persistent vitelline duct. Usually the distal end of the diverticulum closes but it occasionally remains open, forming an umbilical fecal fistula. A prominent reddened tumor called an omphalo-adenoma occasionally may be seen when only the umbilical portion of the vitelline duct remains.<sup>3, 7</sup> The diverticulum may be the sole occupant of a hernial sac.<sup>3</sup>

There is nothing distinctive or pathognomonic in the clinical features of the various pathologic changes which occur in Meckel's diverticulum. The fact that this product of faulty development is present in from 2 to 3 per cent of persons and may produce clinical signs of intestinal obstruction, perforation or hemorrhage, alone or in combination, should be emphasized. The symptoms may simulate those of appendicitis or intestinal obstruction. Since the lesion is small, roentgenologic examination of the gastro-intestinal tract may be indeterminate, although it is of great aid in ruling out lesions of the esophagus, stomach, duodenum and colon as a source of trouble. Repeated attacks of cramping abdominal pain starting in childhood or even infancy, especially if associated with hemorrhage from the bowel, should put the examiner on his guard. Pain and tenderness in the region of the navel also is evidence. The surgeon who finds a comparatively normal-appearing appendix in cases in which the symptoms have pointed to appendicitis should explore the small intestine for a diseased Meckel's diverticulum. As with appendicitis, the troubles to which Meckel's diverticulum are heir are likely to be surgical emergencies.

We have been able to find records of only seven cases of malignant tumor in Meckel's diverticulum. The case presented here is the only one of fibrosarcoma that has been encoun-

\*From the Divisions of Medicine and Surgery, The Mayo Clinic, Rochester, Minnesota. Read before the Southern Minnesota Medical Association, Mankato, August 25, 1930.

tered in the records of The Mayo Clinic. Hicks and Kadinsky operated on a boy aged twelve years for suspected appendicitis and found a perforated, infected carcinoid tumor of a Meckel's

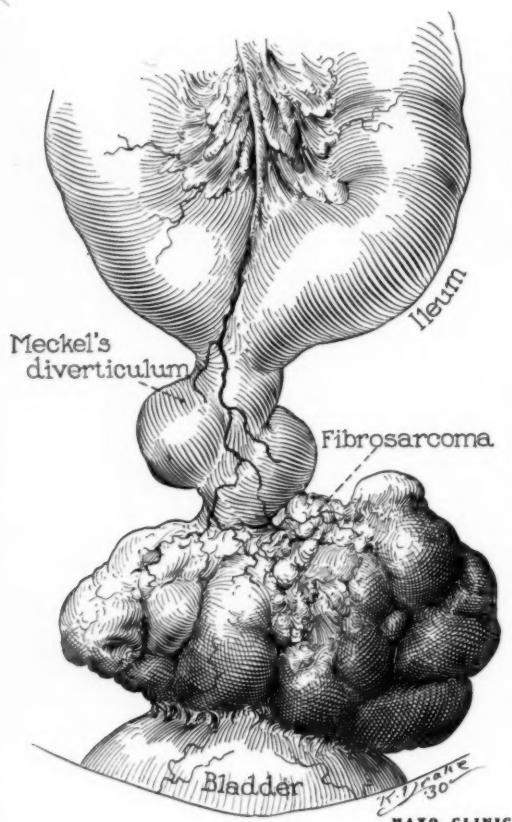


Fig. 1. The tumor in situ. Origin from the tip of the Meckel's diverticulum and attachment to the fatty tissue over the dome of the urinary bladder are shown.

diverticulum, such as Lubarsch has described in the appendix, ileum and jejunum. Hässner operated on a man aged fifty years, and found a necrotic tumor which was thought to have originated from a Meckel's diverticulum; a diagnosis of acute appendicitis had been made. Crile and Portmann reported the case of a woman aged forty-one years on whom they operated for incomplete intestinal obstruction and encountered a fibrosarcoma of a Meckel's diverticulum. Tschiknawerow reported discovering at necropsy on a woman aged sixty-two years a spindle-cell sarcoma of a Meckel's diverticulum which had become necrotic and had perforated, causing generalized peritonitis. Kaufmann mentioned a

spindle-cell sarcoma of a Meckel's diverticulum in the Basler Collection of Pathologic Specimens. Symmers described a malignant myoma springing from the base of a Meckel's diverticulum removed from a man aged twenty-two years; it was discovered by accident during the course of an operation for hernia. Symptoms traceable to its presence could not be elicited. Black's patient was a woman aged fifty-nine years, with a large myxomatous abdominal tumor. Its exact origin was doubtful, although it was believed that it arose from a diverticulum of the sigmoid which may or may not have been the remains of a vitelline duct.

#### REPORT OF A CASE

A man, aged sixty-two years, came to the clinic February 24, 1930, complaining of recurring hemorrhages from the rectum and a dull sensation of pressure in the left lower part of the abdomen. He had been in perfect health until fourteen months prior to admission, when he noticed tarry stools for two days. Weakness and pallor were noticeable at this time and he was anemic. Three months later he passed several ounces of bright red blood by rectum. Approximately every month since then he had had considerable bleeding from the rectum, at times bright red, at other times black and tarry. Appetite and digestion had been excellent. Aside from the indefinite sensation of pressure in the lower part of the abdomen, noticed only in the sitting posture, there had been no abdominal pain. A history of peptic ulcer could not be elicited. The patient had been moderately constipated for years. Slight edema of the lower extremities had been present following a febrile illness twenty years previously, probably phlebitis.

The patient appeared somewhat pale and the hemoglobin was somewhat below normal, 11.5 gm. for each 100 c.c. by the photo-electric method and approximately 65 per cent by the Dare method. The erythrocytes numbered 4,070,000 and the leukocytes 5,500 in each cubic millimeter. The systolic blood pressure was 155 and the diastolic 90. The pulse was 64 and temperature 98°F. Urinalysis, analysis of the gastric contents and roentgenograms of the thorax yielded negative results. Aside from diverticula of the descending colon, the roentgenograms with the barium enema failed to reveal evidences of a lesion. Abdominal mass was not palpable. Proctoscopic examination revealed hemorrhoids of moderate degree. The patient was told that the passage of the fresh blood could easily be accounted for by the hemorrhoids but that the old blood suggested a higher lesion. However, we felt that there was not enough evidence to warrant more than hemorrhoidectomy at this time, especially since stasis of blood in the rectum from bleeding internal hemorrhoids may occur, resulting in the passage of old blood.

Hemorrhoidectomy was performed March 3, 1930, and seven days later a severe rectal hemorrhage of old

tarry blood occurred which the proctologists believed came from a point higher in the gastro-intestinal tract. The hemoglobin dropped from the previous level of 11.5 to 6.8 gm. for each 100 c.c. of blood. Pallor and weakness were marked. Several days after cessation of the hemorrhage the patient was reexamined. Roentgenograms were again made of the esophagus, stomach,

from the patient, July 8, stated that he was in good health.

The clinical features of this case are entirely different from the malignant tumors of Meckel's diverticulum reported in the literature. Intestinal hemorrhage with secondary anemia was the only



Fig. 2. The tumor and the Meckel's diverticulum after their removal. Gross ulceration was not demonstrated.

duodenum and small intestine, following the ingested barium meal, but a lesion was not demonstrable. Blood smears revealed a normal differential count and secondary anemia with moderately active regeneration. Special study of the blood did not reveal evidence of a hemorrhagic blood dyscrasia. Bleeding peptic ulcer, duodenitis, tumor of the small intestine, and ulceration of Meckel's diverticulum were considered.

Exploration was advised. A transfusion of blood was given March 22, and March 25 exploratory laparotomy was performed (Fig. 1). A tumor approximately 7 cm. in diameter was found extending from the tip of a Meckel's diverticulum. It was superficially attached to the fatty tissue over the dome of the urinary bladder. The mass was dissected away from the bladder. The attachment was cauterized with the actual cautery and inverted with a double stitch of chromic catgut (Fig. 2). The diverticulum, together with the tumor, was dissected out with the cautery, without the application of clamps in order to keep well away from the growth. Neither gross nor lymphatic involvement was discovered. The opening in the ileum was closed transversely with three rows of chromic catgut and a single row of interrupted sutures of silk. There were no other abnormalities, aside from slight enlargement of the spleen. The Meckel's diverticulum was about 60 cm. from the ileocecal valve. Microscopic examination of the tumor disclosed fibrosarcoma 9 by 7 by 5 cm. (graded 2) in a Meckel's diverticulum (Fig. 3).

Convalescence was satisfactory. A communication

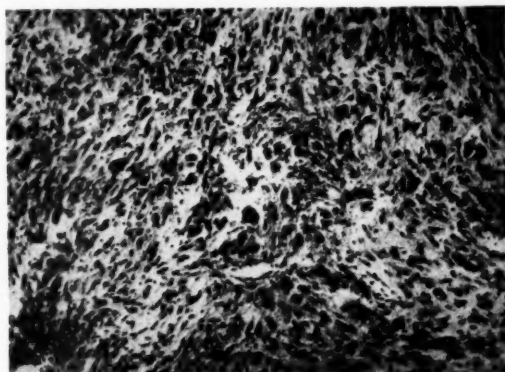


Fig. 3. Fibrosarcoma graded 2, with numerous thin walled blood vessels which undoubtedly were the sources of the repeated intestinal hemorrhages. Foci of lymphocytic cells are seen throughout the section.

significant feature. Loss of weight, abdominal mass, and evidences of perforation, obstruction or inflammation were not present. Laboratory examinations failed to disclose the condition. This case illustrates the value of abdominal exploration in cases of indeterminate intestinal hemorrhage. Although the lesion is rare, it adds another to the list of causes of intestinal bleeding.

#### BIBLIOGRAPHY

1. Abt, I. A., and Strauss, A. A.: Meckel's diverticulum as cause of intestinal hemorrhage. *Jour. Am. Med. Assn.* 87:991-996 (Sept. 25), 1926.
2. Black, W. T.: Congenital diverticula of the intestines. *Surg., Gynec. and Obst.* 28:473-477 (May), 1919.
3. Coley, B. L.: Tuberculosis of Meckel's diverticulum associated with tuberculous appendix. *Arch. Surg.* 11:519-528 (Oct.) 1925.
4. Crile, G. W., and Portmann, U. V.: Primary spindle cell sarcoma of Meckel's diverticulum. *Surg., Gynec. and Obst.* 41:615-617 (Nov.), 1925.
5. Fitz, Reginald: Persistent omphalo-mesenteric remains; their importance in the causation of intestinal duplication, cyst-formation and obstruction. *Am. Jour. Med. Sc.*, n.s., 88:30-57, 1884.
6. Hässner, Hugo: Zur Pathologie des Meckelschen Divertikels. *Frankfurter Ztschr. f. Path.*, 14:501-516, 1913.
7. Hektoen, Ludvig: Vitelline-duct remains at the navel. *Am. Jour. Obst.*, 28:340-352 (Sept.), 1893.
8. Hertzler, A. E., and Gibson, E. T.: Invagination of

- Meckel's diverticulum associated with intussusception: report of a case, with a study of recorded cases. *Am. Jour. Med. Sc.*, 146:364-386 (Sept.), 1913.
9. Hicks, J. A. B., and Kadinsky, S.: A case of "carcinoid tumour" of a Meckel's diverticulum. *Lancet*, 2:70 (July 8), 1922.
  10. Jackson, R. H.: Hemorrhagic ulcer of Meckel's diverticulum. *Ann. Surg.*, 80:222-224 (Aug.), 1924.
  11. Kaufmann, Eduard: *Lehrbuch der speziellen pathologischen Anatomie für Studierende und Ärzte*. Ed. 6, Berlin, G. Reiner, vol. 1, pp. 464-465, 1911.
  12. Mayo, W. J., and Johnson, A. C.: Meckel's diverticulum. *Surg. Clin. N. Amer.*, 6:1127-1130 (Oct.), 1926.
  13. Peterman, M. G., and Seeger, S. J.: Meckel's diverticulum with hemorrhage. *Am. Jour. Dis. Child.*, 36:515-522 (Sept.), 1928.
  14. Schaetz, Georg: Beiträge zur Morphologie des Meckel'schen Divertikels. *Beitr. z. path. Anat. u. z. allg. Path.*, 74:115-293, 1925.
  15. Schwarz, E. G., and Daly, Jack: Meckel's diverticulum associated with severe hemorrhage. *Jour. Am. Med. Assn.*, 93:1468 (Nov. 9), 1929.
  16. Shannon, W. R.: Meckel's diverticulum in infancy and childhood. *Arch. Pediat.*, 45:693-700 (Dec.), 1928.
  17. Symmers, D.: The association of malignant myomata with Meckel's diverticulum. *Ann. Surg.*, 70:183-187 (Aug.), 1919.
  18. Tisdall, F. F.: An unusual Meckel's diverticulum as a cause of intestinal hemorrhage. *Am. Jour. Dis. Child.*, 36:1218-1223 (Dec.), 1928.
  19. Tschiknawerow, Leon: Zur Kenntnis der pathologischen Gewebsbildungen im Meckel'schen Divertikel. *Berl. klin. Wchnschr.*, 2:1676-1679, 1911.

#### FIRST AID BY THE MANUFACTURER.

Doctors received during the Christmas season a copy of the pamphlet entitled "First Aid and Emergencies," prepared by McKesson and Robbins for circulation to the public. It is not surprising to find from consultation of this pamphlet that first aid covers a wide variety of conditions and that apparently McKesson and Robbins have developed something for each of these conditions. Thus, anemia is listed among the conditions demanding first aid and the patient is given full instructions for its control. In addition, biliousness and liver trouble, Bright's disease, diabetes, eczema, gout, rheumatism and tuberculosis are among the conditions demanding first aid. True, the book mentions in various places the desirability of calling a physician, but the patient is encouraged to take a chance. This pamphlet represents one of the worst phases of proprietary medicine business. (*Jour. A. M. A.*, January 3, 1931, p. 44.)

#### INSUROL IN DIABETES

"Insurol" is a nostrum sold on the mail-order plan by a concern or concerns known, variously, as the Official Products, Inc., and New Life Products Co. Insurol has been described as a "triumph of Germany's biochemical laboratories," and, it is said, "combines insulin with the actual substance of the pancreas gland." In diabetes quackery, two elements are nearly always found: The first is that of requiring the person who uses the nostrum to adopt a diet that is low in carbohydrates. The second, and more common, is that of incorporating in the nostrum a diuretic. The average diabetic patient has some rough-and-ready method of estimating the amount of sugar that is excreted. In a report regarding the assumed effects from Insurol, there are many factors that may explain the alleged reduction of sugar. (*Jour. A. M. A.*, January 31, 1931, p. 378.)



## IRRADIATION OF CARCINOMA OF THE CERVIX UTERI\*

HARRY H. BOWING, M.D., and ROBERT E. FRICKE, M.D.  
*Rochester, Minnesota*

THERAPEUTIC radiology has made substantial advances during its brief existence. The discovery of the roentgen ray dates back only thirty-five years and of radium only thirty-two years; their therapeutic application covers three decades. The discoveries were made abroad and hence the initial therapeutic applications were made there. Radium was first used in the treatment of uterine hemorrhage by Oudin and Verchère. Chéron was the first effectively to treat this same disease.

Among the earliest forms of carcinoma to be treated with radium was carcinoma of the cervix of the uterus. Carcinoma in this situation presented an urgent problem because of its prevalence and because surgical results had been far from satisfactory. It was well adapted to the new form of treatment because of the accessibility of the part to inspection and palpation, and because it afforded opportunity for microscopic examination of tissue. Radium was first used in carcinoma of the cervix in 1905, but not effectively until Dominici, in 1907, introduced the principle of proper screening of applicators. Wickham, in Paris, working since 1906, published in 1913 the results of 1,000 cases in which radium was used. In early work, with small amounts of radium, not well filtered, the caustic effects predominated. After this pioneer work abroad, work was started in this country, and in 1915 Kelly and Burnam reported on their work with radium to the American Medical Association and the American Gynecological Society; this work dated from January, 1909. Irradiation for carcinoma of the cervix was commenced at The Mayo Clinic and at the Memorial Hospital in New York<sup>13</sup> in 1915.

Radium and roentgen treatment offer the only hope to sufferers from carcinoma of the cervix except for the achievements of surgery in early cases. In the few early cases diagnosed, both surgery and radium result as a rule in cure for at least five years. In most cases lesions are advanced and inoperable but radium and roentgen

rays can salvage from 20 to 25 per cent for a period of five years, with a primary mortality of approximately 1 per cent. This result so far excels that achieved by surgery that less and less operating is done for this condition.

The results of irradiation are fairly constant throughout the world, although the diversity of methods of treatment is surprising. The main radiologic clinics of the world differ substantially in their methods of application, although the basic principles are fairly uniform. To illustrate this we will summarize the methods and results of a few of the radiologic clinics abroad and in this country.

In France, the pioneer, Regaud,<sup>4, 22, 23</sup> was the originator and is the chief proponent of the long-continued small dose. His technic is reproduced extensively abroad and in many places in this country.<sup>19</sup> Continuous irradiation is applied within the cavity of the uterus and against the cervix for a period of five to ten days. Forty to sixty milligrams are used, half intracervically and the remainder contracervically, three tubes in each position. Platinum screening of 1.0 mm. thickness is used with 2.0 mm. platinum screening on the vaginal tubes. The uterine applicator is a Para rubber catheter 6 cm. long, holding, usually, three capsules of radium. The intra-uterine capsules are filtered with 1 mm. platinum and 0.2 mm. aluminum foil. The capsule nearest the fundus contains 6.66 mg. radium element; each of the lower tubes contains 13.33 mg. radium element. The intra-uterine applicator hence usually contains 33.32 mg. of radium element, which in five days delivers 4,000 milligram-hours. The vaginal applicators consist of three or four capsules each containing 13.33 or 6.66 mg. of radium element; the strength of the wall is 1.5 mm. platinum and each is inserted in an ordinary cork, the walls of which are 0.5 cm. thick. The radium capsule is wrapped in aluminum foil and inserted in the center of the cork; the open ends are closed by plugs of cork and the applicator is immersed in boiling paraffin to sterilize it and to furnish an impervious coat. The corks to fit in the fornices are usually con-

\*From the Section on Therapeutic Radiology, The Mayo Clinic, Rochester, Minnesota. Submitted for publication August 11, 1930.

nected by a rubber-covered strip of steel, which also maintains the third cork against the face of the cervix. Usually 26.66 mg. is the total amount of radium placed in the vagina; five days of treatment will yield about 3,168 milligram-hours. Thus, using only about 60 mg. of radium, 7,200 milligram-hours is given in a treatment of five days.

The radium is removed daily, is cleansed, and is replaced after a vaginal douche has been given; treatment is stopped if the temperature rises above 101.5°F. or if the number of leukocytes in each cubic millimeter of blood falls below 3,500. Total dosage varies between 5,000 and 10,000 milligram-hours. External irradiation is used if the parametria are involved, and consists of highly filtered roentgen rays, as follows: 200 kilovolts, 4 to 5 milliamperes, 2 mm. zinc, 3 mm. aluminum, and 3 cm. wood filters, 60 to 80 cm. distance, six or more overlapping 15 by 15 cm. fields, one hour twice daily for a period of ten to twenty-five days; twenty-five to fifty-five hours of actual irradiation. This precedes the application of radium. Or, preferably, radium is also used for the external treatment: a lead cylinder containing 4 gm. of radium is placed over the eight pelvic portals at 10 cm. distance, for three hours daily. The total dosage amounts to 320 gram-hours (40 gram-hours for each portal). Locally there is considerable slough, which reaches its height the third week, when the toxic absorption is most marked. The rationale of the continuous small dose is to catch all carcinoma cells at the period of mitosis, ostensibly their most vulnerable phase. Following are the results at the Radium Institute of Paris:<sup>4</sup> thirty-eight early lesions, with 42 per cent of five-year cures; 132 borderline lesions with 28 per cent five-year cures; 149 inoperable lesions, with 10 per cent five-year cures, and thirty-one massive lesions with no five-year cures. Of the total 350 patients treated by radium and roentgen ray, seventy (20 per cent) obtained five-year cures.

In Stockholm,<sup>4</sup> the technic evolved by Forssell and Heyman,<sup>14</sup> and used since 1913, is founded on the following principles: (1) a small number of applications (three at most); (2) relatively large quantities of radium at each application, 100 to 120 mg. of radium element; (3) heavy filtration (filter equivalent to 3 mm. lead); (4) concentration of the whole treatment into a shorter period of time (three to four weeks), and

(5) an interval of one week between the first two applications and of three weeks between the two last, with a total irradiation of about sixty hours.

The wall of the tube represents 1 mm. of lead and the wall of the applicator about 2 mm. For the secondary filtration, thin rubber is employed in the uterine cavity, and in the vagina two layers of thin paper and a thin layer of cotton-wool covered with thin rubber or oiled silk.

If the cervical canal can be dilated, radium is inserted into the uterine cavity at all three treatments, as well as against the vaginal surface of the tumor. The total dose in all three applications is 2,200 to 2,600 milligram-hours in the uterus and 4,500 milligram-hours in the vagina. In each of the three applications the uterus receives about 730 to 865 milligram-hours and the vagina, 1,500 milligram-hours. Each single dose entails about twenty hours of treatment. A typical series of treatments follows:

First treatment: In the uterus (4 tubes) 40 mg.  $\times$  19 hours = 760 milligram-hours. In the vagina (12 tubes) 78 mg.  $\times$  19 hours = 1,480 milligram-hours.

Second treatment: In the uterus (1 tube) 43 mg.  $\times$  21 hours = 900 milligram-hours. In the vagina (10 tubes) 71 mg.  $\times$  21 hours = 1,490 milligram-hours.

Third treatment: In the uterus (1 tube) 39 mg.  $\times$  19 hours = 720 milligram-hours. In the vagina (10 tubes) 80 mg.  $\times$  19 hours = 1,520 milligram-hours.

Aggregate dose: In the uterus 2,380 milligram-hours. In the vagina, 4,500 milligram-hours.

A specimen for microscopic examination is taken after insertion of the intra-uterine capsule.

Roentgen treatment in addition has been added since 1922 only for those cases in which isolated nodal metastasis or large parametric infiltration has been present at the commencement of treatment. Radium packs have also been used externally with encouraging results, but too recently to permit judgment of them.

The results have been as follows: 737 patients were treated from 1914 to 1923 inclusive; the condition of 25.5 per cent of these was operable. The primary mortality was 2.1 per cent. Among the 188 operable cases, 43.6 per cent of patients obtained five-year cures. Inoperable and borderline cases together, 549 in all, gave 16 per cent

five-year cures, and 492 inoperable cases alone yielded 13 per cent five-year cures.

In Erlangen, Wintz is using roentgen treatment exclusively for carcinoma of the cervix. He uses two series of treatments, employing small fields, 6 by 8 cm. and 8 by 8 cm. In the first series, a full dose for carcinoma is given to the uterus alone. Eight weeks later treatment is directed to the parametria, and at the same time 80 per cent skin erythema dose is administered to the primary lesion. He reported 108 inoperable cases with 57.4 per cent five-year cures, and 632 inoperable cases with 12.3 per cent five-year cures. This method is a very severe one for the patient. Huge quantities of roentgen rays must be absorbed by overlying tissues from the rays directed to the lesion in the depths. It has not been possible to duplicate this work in this country, and cures have not been reported here to our knowledge from roentgen rays alone.

In Munich, the physicians of the Döderlein Clinic<sup>7</sup> are enthusiastic about the results of radium and roentgen treatment. Hysterectomy has been abandoned there since 1913. Von Seuffert reported 80 per cent of five-year cures in early cases in which the entire course of treatments was given. This record equals the report of 80 per cent of five-year cures by surgery alone given by Von Franqué.

Since 1918 roentgen treatment has been added to radium treatment. The method consists of two or more treatments at intervals of eight weeks.<sup>4</sup> In the first treatment sensitization of the tumor is attempted by application of roentgen rays to the pituitary body. Each temple is irradiated over an area 6 by 8 cm. as follows: at 200 kilovolts, 2.5 milliamperes, 30 cm. distance, and filtration is 1 mm. copper. Each field receives 30 per cent of the erythema dose. The following day roentgen rays are applied to the pelvis: 10 by 15 cm. fields are used, one abdominal and one dorsal exposure; 200 kilovolts, 2.5 milliamperes, 50 to 60 cm. distance and 1 mm. copper filtration; each field receives 90 per cent of the erythema dose. The pelvic irradiation is performed in one day if possible.

Biopsy is performed the following day, and the day after that radium is applied. Several tubes are placed within the uterus and cervix, aggregating 55 mg. radium element, filtered with 0.2 mm. silver, 1 mm. brass, and a layer of thin rubber. The radium is left in place for twenty-four

hours. The vaginal applicators consist of several tubes with filtration of 1 mm. brass imbedded in corks; the total amount used is 55 mg. radium element and this is left in place twenty-four hours.

The second treatment, eight weeks later, is a repetition of that just recorded except that further irradiation of the pituitary body is omitted.

Results were gathered from 1,319 patients treated between 1913 and 1923 inclusive. The rate of operability in this group was 17.2 per cent. Considering the operable group, 163 patients received full treatment and 50.2 per cent obtained five-year cures. In twenty-five borderline cases in which complete treatment was given, 28.3 per cent of the patients obtained five-year cures; also 13.1 per cent of 543 patients with inoperable lesions and 1.2 per cent of 239 patients with massive lesions obtained five-year cures. The total rate of survival for five years among 1,216 patients who received the full treatment (103 stopped after one treatment) was 18.2 per cent.

In Switzerland, Fürst, at Zürich University, advocates roentgen treatment followed by radical hysterectomy (Wertheim's operation) six weeks later, and following this roentgen or radium treatment if malignant tissue cannot be entirely removed. If the growth has been cleanly extirpated, further irradiation is not employed unless recurrence occurs. The method is too recent to judge of its merit; results have not yet been published.

At the Radium Institute of Brussels, a uterovaginal application is made first, involving dilatation for insertion of intra-uterine tubes and insertion of tubes in the fornices. Filtration consists of 2 mm. platinum and special rubber. One or two tubes are placed in the uterus and one in each lateral fornix; each tube contains 10 mg. radium element. The length of application is twelve to fifteen days, with removal and cleansing of the tubes every two days. The total dosage is 7,920 to 9,240 milligram-hours. In some cases, intra-abdominal treatment is added by performing laparotomy and placing needles and tubes containing 10 mg. at the base of each broad ligament. The radium is withdrawn after six days. Results are meager, as the Brussels Radium Institute is of recent development. In eleven operable cases, 54.5 per cent of patients obtained five-year cures; of fourteen inoperable cases, 35.7 per cent of patients lived five years.

In England, Cade is enthusiastic concerning his treatments with radium; the methods follow those of the Regaud and Belgian schools. Results are not yet published.

In this country, Kelly and Burnam were pioneers in this treatment.<sup>17</sup> They use the massive dose, given in one application, and see no advantage in small doses given for a longer time. Radon, in brass tubes with walls 2 mm. thick, is used. With the patient in the knee-chest position, two tubes are placed intracervically, and five to eight tubes (equalling in amount the intracervical radium) are placed in a gauze package against the face of the cervix. They consider this method to yield sufficient cross-firing without placing radium in the uterine canal. One thousand to 1,500 millicuries are used altogether. Two or more pieces of  $\frac{1}{4}$ -inch lead wrapped in gauze are placed above the cervix to protect the rectum, and the vagina is filled with gauze. Lead is not placed on the side of the bladder. The total treatment consists of 3,000 millicurie-hours, given usually in two hours' time. Extension in the parametria is taken care of by implantation of radon seeds through the vagina. Since 1924 high-voltage roentgen rays have been added to take care of parametrial extension, in cases which do not clear up in two months. In all cases, a piece of tissue about 2 by 3 mm. is taken for microscopic study. Patients are dismissed for three months following treatment. An extensive slough, with formation of a grayish-green membrane and foul discharge, occurs about a month after treatment. Two hundred thirteen patients treated prior to 1915 were traced. All patients, even if the condition was hopeless, were treated. Fifty per cent of the patients in the operable group were well after seven years, and of the inoperable group 7.8 per cent had survived for seven years.

In Philadelphia, at the University Hospital and the Philadelphia General Hospital, radium and surgery are used. Under general anesthesia trachelectomy is performed with the cautery whenever feasible, and the bladder is separated surgically nearly to the peritoneal attachment. Following excision of the cervix, 50 mg. of radium is applied to the canal and a like amount to the cervical stump, in a metal, T-shaped instrument devised by Clark; filtration consists of 1 mm. brass and 0.5 mm. aluminum. The duration of the treatment is twenty-four hours; the

dosage totals 2,400 milligram-hours. Treatment is given in the dorsal position under anesthesia, with two retractors to expose the field. Biopsy is obtained at operation. A piece is removed from the edge of the cervix, not less than 2 cm. in diameter, and should include normal cervical tissue. There is diversity of opinion as to the advantage of roentgen treatment; it is given as a routine at the Philadelphia General Hospital and not at the University Hospital. Clark and Norris reported 28.5 per cent of five-year cures in early cases with radium alone, and 83 per cent of five-year cures in early cases with trachelectomy and radium, considering a total series of 214 cases. In the advanced cases, irradiation alone cured in 5.1 per cent for a period of five years, and irradiation and amputation by cautery gave a five-year cure in 20 per cent. All cases combined, irradiation alone cured in 5.9 per cent for five years, with a mortality of 1.4 per cent, and irradiation with amputation by cautery in 42.9 per cent with an operative mortality of 10.6 per cent.

In New York carcinoma of the cervix has been treated with radium at the Memorial Hospital<sup>18</sup> since 1915; treatment has been given in about 2,000 cases to date. Up to 1921, radium only was used, topically and also for external cross-firing. Since January, 1922, roentgen rays have been used for the external treatment, following the course of radium or in foul necrotic lesions preceding it. Healy stated that at least two-thirds of all his patients have parametrial involvement when first seen. Local recurrences are rare after five years, but recurrences in the parametrial lymph nodes may take place after six, seven, or eight years. Hence, particular attention is paid to cross-firing the parametria with external irradiation. High-voltage roentgen rays replaced moderate voltage in the last three or four years. The exposures are made at five portals encircling the pelvic girdle, the fifth one centered on the third lumbar vertebra to affect the prevertebral lymph nodes in this region. The factors given are as follows: 200 kilovolts, 0.50 mm. copper, 1 mm. aluminum, 50 cm. distance, 4 milliamperes, 60 to 80 minutes and 15 by 15 cm. Radium is applied intracervically in a two-tube tandem arrangement and in a vaginal bomb containing a large amount of the element. Six thousand millicurie-hours are given, half intracervically and half vaginally, within forty-eight



hours. The combination of radium and intensive roentgen treatment produces from 400 to 6,000 per cent skin erythema dose throughout all parts of the pelvis. Interstitial application or needles are used only after several weeks if the lesion does not regress satisfactorily. This can be defined as the true massive dose. For the years 1922, 1923 and 1924 the following results are quoted: 44.5 per cent of five-year cures in the early and borderline cases. Recent results in inoperable cases are not given.

In New York at the Woman's Hospital Clinic, Ward employs radium by the method of inserting small amounts in the cervical canal, screened with brass and rubber, and placing needles 2 cm. apart throughout the cervix. The initial treatment is 2,400 to 4,200 milligram-hours. External irradiation is not used. Results in 134 cases were 53.1 per cent five-year cures in thirty-two favorable cases (operable and borderline lesions) and 23.1 per cent in all cases.

In Chicago, Schmitz<sup>25</sup> has been using radium and roentgen rays in this disease since the beginning of 1914. He uses radium in an intra-cervical applicator (two 25 mg. tubes in 1.5 mm. brass) for a period of twenty-four hours. High-voltage roentgen treatment is added, so that the irradiated region attains 110 to 130 per cent skin erythema dose. Schmitz<sup>24</sup> stated: "If we use radium without roentgen ray in cervical carcinoma we are at a disadvantage due to the rapid decrease of the intensity and therefore inhomogeneous distribution of the rays. The regional lymphatics cannot be effectively destroyed. If we employ roentgen ray without radium then we are limited by the tolerance of the skin to a low dose though a homogeneous distribution of the rays throughout the pelvis is attained. However, if we use a combination of radium and roentgen ray we can obtain a homogeneous distribution of a radiation intensity throughout the pelvis." Schmitz<sup>26</sup> reported his latest five-year results as follows: 78.27 per cent of five-year cures in early cases, 41.68 per cent in borderline cases, 12.42 per cent in inoperable cases, or a five-year salvage of 17.5 per cent in a total of 332 cases.

At Montclair, New Jersey, Stevens follows the Regaud technic, keeping his patients under influence of roentgen ray and radium for twelve weeks. The number of patients treated averages fifty a year, and 84 per cent of five-year cures are obtained in early cases, 42 per cent in border-

line cases, 19 per cent in advanced cases, and no cures in cases of massive growths.

In Boston, Simmons and Leland employ radium at the Huntington Memorial Hospital. Formerly the treatment consisted of applications of screened radium, repeated every two or three months. At present, one heavy treatment only is given and that under general anesthesia. A patient receives about 5,000 millicurie-hours divided between silver-screened irradiation and gold seeds; the idea of using seeds is to prolong the exposure. The results, they state, have been very satisfactory but they are not yet published. Simmons and Leland are studying the results in 803 cases. In 1924 Leland reported three-year results with similar massive doses of so-called "unscreened" radium; the tubes of emanation were enclosed in steel jackets, and the glass seeds were left permanently. The radium was left in place for three to eight hours. A total dosage of 5,000 millicurie-hours was given. Of 165 patients, 147 were traced. The three-year results were as follows: 45 per cent cures in the favorable cases, 12.1 per cent in advanced cases and 12.7 per cent in the whole group. External irradiation was not applied.

In Buffalo, at the State Institute for the Study of Malignant Disease, Schreiner last year reported his method as follows: roentgen treatment is begun on the day of admission, by giving 25 per cent dose at a depth of 10 cm. The following day, the patient is placed in the lithotomy position, is put under general anesthesia, and the cervix is dilated and is filled to the internal os with tandem tubes containing emanation. These tubes are 5 cm. long and the filtration consists of 0.5 mm. gold, 0.5 mm. brass, and 1.0 mm. rubber. The tubes are left in position for a total of 1,200 millicurie-hours for each tube. Biopsy is performed before the tubes are placed. The day following removal of the radium, more high-voltage roentgen ray is given to bring the total irradiation (including the radium) to 130 to 140 per cent skin erythema dose. The whole treatment takes four to seven days. Five-year cures were secured in 64.28 per cent of early cases, in 28.57 per cent of borderline cases, in 14.47 per cent of advanced cases, in 1.44 per cent of cases of massive growth, and in 5.40 per cent of recurrent cases. The series consisted of 293 patients. The mortality was less than 1 per cent.

In Cleveland, Pomeroy gives a general anesthetic, obtains biopsy and dilates the cervix, then fills the canal from fundus to external os with tubes of radium element screened with 0.5 mm. silver, 1 mm. brass, and 1.5 mm. rubber, usually 75 mg. for thirty-six hours, or 2,700 milligram-hours. Glass or gold emanation seeds are implanted into the cervix in addition, usually twelve seeds of 1 millicurie each, with a dosage of about 1,584 millicurie-hours. The maximal dosage is 6,000 milligram-hours and millicurie-hours. Two hundred twenty-seven cases are reported; the proportion of five-year cures was 80 per cent in early cases (only five cases), 17.24 per cent for the entire group. The lesion was adenocarcinoma in more than half of the cases in which cure was effected. External irradiation was not used.

Technic and results at The Mayo Clinic will now be considered. There have been frequent changes in method since the inception of the treatment of the clinic in 1915. As it now stands intensive fractional dosage is employed; a massive dose is applied over a period of two to three weeks. The cases are first classified anatomically, according to the extent of the lesion.<sup>1</sup> Early or operable lesions are those limited to the cervical canal or to a small portion of the face of the cervix, and that they are early lesions is verified by biopsy. In borderline cases the lesion involves the face of the cervix and usually has extended to the parametria. Inoperable lesions are those extending to the vaginal walls or infiltrating the broad ligaments, usually with fixation. The recurring cases are those in which the carcinoma has reappeared after adequate surgical or radiologic treatment. Modified lesions are those treated elsewhere with some form of operation or irradiation, which evidently has proved inadequate, since the patients come with evidences of their former trouble.

The cases are also classified as to the type of treatment applied: whether complete, incomplete, limited, abandoned, or prophylactic. At the first examination we endeavor to place the patient in one of these groups, exercising our radiologic judgment. If the general condition seems satisfactory and a chance of cure appears possible, we endeavor to give a complete course of treatment, consisting usually of approximately eight applications of radium over a period of two to three weeks. The radium is given intracervically, interstitially, within the uterus, and vaginally,

followed by one, two or three courses of roentgen treatment. The 50-mg. universal tube, filtered through 1.5 mm. monel metal, or a tube containing 50 millicuries of radon, enclosed in 0.5 mm. of silver and 1 mm. of brass, is the usual radium applicator employed. The duration of each treatment is twelve to fourteen hours. The entire length of the cervical canal and uterus is treated, applying usually two treatments to each 2.5 cm. of canal. In large cauliflower growths, radium in platinum needles is implanted, distributing the energy equally throughout the mass. The vaginal applications are made to the face of the cervix and in each fornix; the radium, besides its covering of monel metal, is shielded by 2 mm. of lead and 1 cm. of Para rubber. Treatments are given under direct inspection, with the patient in the knee-chest position; anesthesia is not required, except that with intra-uterine applications and with implantation, a Number 2 tablet of hyoscine, morphine and cactine is given hypodermically. After the applicator is placed, the vagina is packed with gauze. When radium is placed in necrotic craters, the applicator is enclosed in 2 mm. of lead to minimize further necrosis by filtering out the rays of longer wavelengths.

One complete course of radium only is given, unless local recurrences occur. For debilitated and cachectic patients with massive lesions a limited or palliative treatment is outlined. Following surgical removal of growths the treatment is given vaginally and is prophylactic. "Abandoned" cases are those in which our judgment has been at fault; that is, complications have developed if patients have no reserve strength to endure the treatments prescribed for them and treatment has had to be discontinued.

Our five-year results were recently reported, and include all cases treated with radium from 1915 to 1924 inclusive.<sup>2</sup> One thousand ninety-four patients were seen and of this number 1,001 (91.50 per cent) were traced. In this same period 167 patients were seen and not treated because of recent treatments elsewhere, or the hopeless extent of the condition. One hundred thirty-two patients were treated by surgical excision without irradiation, chiefly in the earlier of the years reviewed. Of the 1,001 patients treated and traced, 75 per cent of the small group seen early obtained a five-year cure, as did 61.53 per cent of those with borderline lesions, 21.49

per cent of those with inoperable lesions and 24.82 per cent of those with modified lesions. Of all four groups, there was survival for five years in 23.87 per cent, in 23.15 per cent with the modified group excluded, and in 66.66 per cent of the early and borderline lesions together. Of 625 cases in which biopsy was performed, 92 per cent were of epithelioma, 7 per cent of adenocarcinoma, and 1 per cent of mixtures of the two. Further analysis disclosed that 76 per cent of the lesions were graded 3 or 4, 15 per cent were graded 1 or 2, and 9 per cent were not graded. Analysis of five-year results by grade of lesion revealed that the small group with adenocarcinoma had the best survival; in grades 3 and 4 of both epithelioma and adenocarcinoma the best five-year survivals were obtained except in the modified group. Our mortality in hospital for the ten-year period was 1 per cent.

Comparison of radiologic results with surgical results is difficult, because the percentage of cases regarded as "operable" differs markedly with different surgeons. One surgeon will accept 15 per cent of all cases for operation; another will operate on 70 per cent of all patients that consult him. The radiologists also differ in classification, but on the whole radiologists are sought by patients in a far more advanced and hopeless condition.

Heyman,<sup>15</sup> in a report in June, 1927, before the Scandinavian Surgical Society, summarized the surgical statistics from twenty surgical clinics throughout the world (5,024 cases) and the radiologic statistics of seventeen radiologic clinics (3,512 cases). The five-year results in this massive collection were as follows: surgical cures for all cases, approximately 18 per cent; radiologic cures, 16.3 per cent; cures for operable and borderline cases by operation 35.6 per cent and by radiologic treatment 34.9 per cent; primary mortality for all cases, after operation 17.2 per cent, and after radiologic treatment approximately 2.0 per cent. Moreover of the total number of patients seen in surgical clinics, the condition was considered to be in an operable stage in 43 per cent, whereas of the total number of patients seen in radiologic clinics, the condition was considered to be in an operable stage in less than 30 per cent.

These figures approach each other closely, but the difference in the character of the initial material should be taken into account. The radio-

logic results are based on far more advanced and hopeless lesions, as shown by the condition, as regards operability of patients seen in surgical and in radiologic clinics.

#### SUMMARY

In this rapid review of methods and results in the largest radiologic clinics, we have found great variation in method with fairly uniform results. With radium, treatments may be given in two hours, and also in a month of constant irradiation, with all gradations between these extremes. The method at The Mayo Clinic lies between the massive dose and the fractional dose and embodies some of the advantages of each. In many parts of Germany roentgen treatment alone is used successfully; the results are not duplicated in this country. In four large clinics only (Baltimore, Stockholm, Cleveland, and Boston) radium is used without the help of roentgen rays.

In July, 1924, Greenough published the Report of the Committee on Treatment of Malignant Diseases with Radium and Roentgen Rays. Greenough's summary contained the information that in early and favorable cases of carcinoma of the cervix the choice between radium and operation is an open one. In advanced cases, the value of radium as a palliative measure is beyond dispute. In cases recurrent after hysterectomy, and in cases of carcinoma of the cervical stump, radium is the treatment of choice.

It must be remembered that either form of treatment, irradiation or operation, can effect cures only if the disease is local; if distant metastasis has occurred, surgery has nothing to offer, whereas irradiation may yield considerable palliation.

#### BIBLIOGRAPHY

1. Bowling, H. H., and Fricke, R. E.: Radium treatment of carcinoma of the cervix during 1927. *Am. Jour. Roentgenol. and Radium Therap.*, 21:529-537 (June), 1929.
2. Bowling, H. H., and Fricke, R. E.: Results obtained in the treatment of carcinoma of the cervix uteri with radium and roentgen rays from 1915 to 1924 inclusive. *Radiology*, 14:211-216 (March), 1930.
3. Cade, Stanford: Radium treatment of cancer. New York, Wm. Wood and Co., 1929, 158 pp.
4. Cancer Commission: Reports submitted by the Radiological Sub-commission. Geneva, Series of League of Nations Publications, iii, Health, 1929, iii, 5, 82 pp.
5. Chéron, D. H.: De la radiumthérapie des fibromes

- utérins. *Arch. d'élect. méd.*, 19:353-363 (April), 1911.
6. Clark, J. G., and Norris, C. C.: Radium in gynecology. Philadelphia, J. B. Lippincott Co., 1927, 315 pp.
  7. Döderlein, Albert, Döderlein, Gustav, and Voltz, Friedrich: Über das Uteruskarzinom und seine Strahlenbehandlung. *Acta Radiol.*, 6:335-362, 1926.
  8. Dominici: Quoted by Lynch, F. W., and Maxwell, Alice F.: *Pelvic neoplasms*. New York, D. Appleton and Co., 1922, p. 264.
  9. Forssell: Quoted by Heyman.<sup>14</sup>
  10. von Franqué: Quoted by Lynch, F. W., and Maxwell, Alice F.: *Pelvic neoplasms*. In: *Gynecological and Obstetrical Monographs*. New York, D. Appleton and Co., 1925, Appendix, p. 126.
  11. Fürst, Walter: Zur Frage der Strahlenbehandlung der Collumkarzinoma. *Zentralbl. f. Gynäk.*, 50:1938-1945 (July 24) 1926.
  12. Greenough, R. B.: The treatment of malignant diseases with radium and x-ray—cancer of the cervix. *Surg., Gynec. and Obst.*, 39:18-26 (July), 1924.
  13. Healy, W. P.: Carcinoma of the cervix. *Radiology*, 14:217-222 (March), 1930.
  14. Heyman, James: Experiences with a modification of the technic hitherto used at Radiumhemmet in the radium treatment of cancer of the cervix. *Acta obst. et gynec. Scand.*, 9:259-266, 1930.
  15. Heyman, James: Radiology as a complete or partial substitute for surgery in treatment of cancer of the female pelvic organs. *Surg., Gynec. and Obst.*, 50:173-183 (Jan.), 1930.
  16. Kelly, H. A., and Burnam, C. F.: Radium in the treatment of carcinomas of the cervix uteri and vagina. *Jour. Am. Med. Assn.*, 65:1874-1878 (Nov. 27), 1915.
  17. Kelly, H. A., and collaborators: *Gynecology*. New York. D. Appleton and Co., 1928, pp. 929-954.
  18. Leland, G. A.: Massive dose radium treatment in carcinoma of the cervix uteri. *Am. Jour. Roentgenol. and Radium Therap.*, 12:373-378 (Oct.), 1924.
  19. Lenz, Maurice: Radiotherapy of cancer of the cervix at the radium institute, Paris, France. *Am. Jour. Roentgenol. and Radium Therap.*, 17:335-342 (March), 1927.
  20. Oudin and Verchère: Du radium en gynécologie. *Compt. rend Acad. de sc.*, 143:90-92, 1906.
  21. Pomeroy, L. A.: Five-year end-results of radium treatment in carcinoma of the cervix uteri. *Am. Jour. Roentgenol. and Radium Therap.*, 18:514-519, (Dec.), 1927.
  22. Regaud, Claude: Traitement des cancers du col de l'utérus par les radiations. *Soc. internat. de chir.*, 1:34-146 (April), 1926.
  23. Regaud, Claude: Radium therapy of cancer at the radium institute of Paris. *Am. Jour. Roentgenol. and Radium Therap.*, 21:1-24 (Jan.), 1929.
  24. Schmitz: Quoted by Clark and Norris.
  25. Schmitz, Henry: The technic of the treatment of carcinoma of the cervix uteri with a combination of x-rays and radium rays. *Am. Jour. Roentgenol. and Radium Therap.*, 10:219-229 (March), 1923.
  26. Schmitz, Henry, and Hueper, William: Histological structure, clinical grouping, and prognosis of cancer of the uterine cervix and the breast. *Radiology*, 14:223-231 (March), 1930.
  27. Schreiner, B. F.: End-results of radium treatment in epithelioma of the cervix uteri based on a study of 374 cases—1914 to 1923 (inclusive). *Radiol. Rev.*, 51:141-147 (April), 1929.
  28. von Seuffert: Quoted by Lynch, F. W., and Maxwell, Alice F.: *Pelvic neoplasms*. In: *Gynecological and Obstetrical Monographs*, New York, D. Appleton and Co., 1925, Appendix, p. 120.
  29. Simmons, C. C.: Personal communication to the authors.
  30. Stevens, J. T.: Management of carcinomata of the uterine cervix. *Radiology*, 12:423-428 (May), 1929.
  31. Ward, G. G.: Radium therapy of carcinoma uteri. *Am. Jour. Obst. and Gynec.*, 17:1-13 (Jan.), 1929.
  32. Wickham: Quoted by Lynch, F. W., and Maxwell, Alice F.: *Pelvic neoplasms*. New York, D. Appleton and Co., 1922, p. 264.
  33. Wintz, Herman: Ergebnisse der Strahlenbehandlung beim Uteruscarcinom und Mammacarcinom. *Strahlentherapie*, 33:456-466, 1929.



## THE RELATIONSHIP OF EPILEPTIC SEIZURES TO BRAIN TUMOR\*

HARRY L. PARKER, M.B. (Dublin)  
Rochester, Minnesota

IN the course of examination of patients seeking aid primarily because of epileptiform convulsions, there is the constant fear that sooner or later some of these patients may have signs of tumor of the brain. In the minds of both the lay public and the medical profession, a diagnosis of epilepsy seems to represent an unpardonable blunder if the patient later shows indications of gross cerebral disease. Further, in making a diagnosis of epilepsy it is usually assumed by both examiner and patient that not much can be expected in the future other than recurrent convulsive attacks. The question might be asked: How often does a convulsive seizure occur as the initial symptom in cases of cerebral tumor and is it possible for such seizures to continue over a long period before signs of tumor appear? Conversely, it is of interest to know the frequency with which cerebral tumors are found either before or after death in both institutionalized and non-institutionalized cases of epilepsy.

In a recent contribution on the subject<sup>3</sup> it was demonstrated that in a series of 313 patients suffering from cerebral tumor, sixty-seven (21.6 per cent) were found to have had generalized epileptiform convulsions some time during the course of the disease. It is noteworthy from the present standpoint that of these sixty-seven patients there were thirty-eight whose initial symptom was the convulsion. Fifteen patients, however, simultaneous with or even shortly after this initial convulsion, manifested unmistakable signs of tumor of the brain. It is obvious, therefore, that there might be no risk in making an erroneous diagnosis in cases in which signs of gross cerebral disease developed more or less rapidly shortly after the initial convulsion. Twenty-three patients had had a period of illness of varying length before the appearance of symptoms of tumor. During this period symptoms other than convulsions had not appeared. Ten of these patients suffered the usual course of symptoms of cerebral tumor within a year. Finally, a group of thirteen cases was isolated in which convul-

sive seizures had occurred for more than a year without any clue as to the real nature of the disease. This represents 4.1 per cent of the total series. In three cases seizures had occurred for many years before any other symptoms appeared. In the remaining ten cases the average time during which other manifestations than epileptiform attacks had not occurred was five and six-tenths years. It is probable that in all of these thirteen cases a diagnosis of epilepsy had been made years before the true nature of the trouble was suspected.

### ABSTRACTS OF ILLUSTRATIVE CASES

*Case 1.*—A man, aged fifty-nine years, came to The Mayo Clinic February 16, 1922, because of convulsions and failing mentality. Twenty-six years before, he had begun to have convulsive attacks, usually at night when he was asleep. At first these attacks were three or four years apart; they gradually became more frequent until they had been about a week apart for the previous two years. Usually during attacks the patient bit his tongue and lost control of his urine. Six months before he came to the clinic the attacks changed in character and time of onset. Instead of generalized convulsions, he had short periods of loss of consciousness, usually lasting one to two minutes, during which he looked blank, stared straight ahead and acted in an automatic fashion and was usually confused for a half hour afterward. For a year he had noticed failing memory and difficulty in concentration. He had become increasingly irritable, and started quarrels at the least provocation. Several times during the previous year he had found himself in parts of the packing plant where he worked where he had no business and had wondered how he had got there. His wife stated that his mentality had become feeble and he had a tendency to talk at random and incoherently.

There was a fine tremor of both hands. All tendon reflexes were exaggerated. Speech was indistinct and there was a certain degree of paraphasia. Intelligence, cooperation and attention were considerably reduced. Roentgenograms of the skull showed a large osteoma in the frontal region involving the greater part of the left and the right frontal bones, but chiefly the left. There was no weakness of either side of the body and ophthalmoscopic examination of the eye grounds was negative. A diagnosis was made of osteoma of the frontal bone with underlying meningioma.

Craniotomy was done February 25, 1922. A huge meningioma was found 9 cm. in diameter arising from the left side of the falx cerebri, just above the left frontal sinus. It was extremely hard and filled with

\*From the Section on Neurology, The Mayo Clinic, Rochester, Minnesota. Read before the Southern Minnesota Medical Association, Mankato, August 25, 1930.

psammoma bodies. It had invaded the frontal bone. The patient recovered from the immediate effect of the operation and seemed to be getting along well when fever developed suddenly, with swelling and redness over the left eye and bridge of the nose. His neck became rigid. He was at first confused, then became comatose and died two days later, eleven days after the operation. Necropsy revealed the terminal cause as acute septic cerebrospinal meningitis.

*Comment.*—The interest in this case lies in the length of time before anything but epileptiform attacks became manifest. Grand mal became replaced by petit mal in the last six months of the patient's illness and it was only in the last year of the period ranging over a quarter of a century that other symptoms of a gross lesion of the brain became manifest. It might be argued that this was a case of so-called idiopathic epilepsy in which tumor of the brain had become superimposed. However, the type of tumor is that recognized as being extremely slow in growth, and, considering its relatively large size, twenty-six years was not too long for its life history. It had probably been present even longer.

*Case 2.*—A man, aged fifty-nine years, came to The Mayo Clinic May 16, 1926, because of convulsive attacks and increasing weakness of the left side of the body. Sixteen years previously, seizures had developed in which the left hand and arm would flex toward the mouth and be held then in tonic contraction. Relaxation would occur in less than a minute and the patient would appear normal again. These attacks might occur ten or twelve times a day, with a free period of from two to three weeks. There was no loss of consciousness. Eleven years before the tonic contractions took in the muscles of the head and face, the head and eyes would turn to the left and the face would contract. Six years before his admission to the clinic, the attacks changed in character and became more severe. Clonic jerkings appeared which progressed from the hand to involve the whole left side of the body or from the foot to the rest of the left side. Usually toward the end of the seizure consciousness was lost but was regained in from three to five minutes. One year before admission, progressive weakness, beginning in the left foot, had spread to affect the rest of the body. Memory had become poor, incontinence of bowels and bladder occurred, and the patient became confined to bed three or four weeks before he came to the clinic.

The patient was dull, apathetic and drowsy; he answered questions poorly and had an obvious memory defect. There was complete paralysis of the left side with ankle and wrist clonus, and Babinski's sign was present on plantar stimulation. There were apparently no sensory changes in the limbs affected. Roentgen examination of the skull was negative and changes could not be found in the eye grounds or visual fields. Spinal puncture showed clear fluid under pressure of 16 cm. of water with 1 small lymphocyte for each cubic milli-

meter of fluid. The Wassermann reaction of the blood and spinal fluid was negative. A diagnosis was made of subcortical tumor in the right cerebral hemisphere underlying the motor cortex.

June 2, craniotomy was performed with exploration of the brain. A purplish-red tumor with a definite outline was found to be approaching the surface of the brain in the right frontal and parietal regions. No attempt was made to remove it, but decompression was done. The patient died suddenly the second day after operation. Necropsy revealed a large glioma of the corpus callosum in the frontal region which had extended into the frontal, parietal and temporal lobes.

*Comment.*—The convulsions in this case were much more suggestive of gross cerebral disease. At the onset these were tonic and involved the left upper extremity. However, for ten years no other manifestations appeared and presumably general examination during this long time showed nothing abnormal. In the last six years the convulsions were more jacksonian in character. I have been led to believe that simple tonic contractions of one extremity lasting a relatively short time indicate a subcortical process. Later, as the tumor reached the surface, cortical irritation was characterized by jacksonian attacks. Finally, in the last year paralytic symptoms appeared and diagnosis was no longer difficult. The tumor was also different, being gliomatous in character but again of excessively slow growth.

*Case 3.*—A woman, aged thirty-eight years, came to The Mayo Clinic February 2, 1927, because of convulsions and headaches. For ten years she had lost consciousness once or twice a year: the longest interval between the attacks had been two years. The attacks were preceded by an aura of inability to talk which lasted about a minute, was followed by a turning of the head to one shoulder, loss of consciousness and falling. During the attacks she was cyanosed and had clonic jerking of all extremities. Occasionally she did not sleep, and then slept soundly for several hours. There had also been a few minor attacks consisting of transitory loss of speech. A year before she came to the clinic occipital headaches appeared; these increased in frequency and severity and became associated with vomiting. Two weeks before examination she had noticed slight blurring in vision in reading and writing and occasionally transient diplopia.

The patient was well developed and well nourished, not apparently acutely ill, and there were no signs of mental impairment. Ophthalmoscopic examination showed acute papilledema of about 4 diopters in both optic disks. Roentgenograms of the skull showed slight enlargement of the sella turcica with thinning of the posterior clinoid processes. Tendon reflexes were increased on the left side of the body; there was slight loss of speed on that side, and although the gait showed nothing unusual the patient could not hop as well on the left limb as on the right. A diagnosis was

made of tumor of the cerebrum in the right fronto-temporal region.

Craniotomy was performed February 15, 1927. A large subcortical tumor was found. No attempt was made to remove it, but decompression was done. The patient died three days later. Necropsy showed a large, subcortical glioma of the brain in the left frontoparietal region.

*Comment.*—In nine years this patient had had seizures that resembled epilepsy; then the headaches and visual disturbance gave a clue as to the nature of the disease. The aphasic type of aura might have led to a suspicion of tumor, since this is not common in cases of epilepsy, but at the outset the diagnosis was difficult and the period of waiting for further developments was necessarily a long one. Ventriculography or encephalography would have helped in this case had the true condition been suspected early.

*Case 4.*—A man, aged forty-one years, came to The Mayo Clinic August 2, 1923, because of convulsive attacks. He stated that he had had these for nine years and although at first they came two or three times a month they had gradually increased to the same number in a day. They occurred both during the day and at night. Usually he had a warning in the form of a peculiar sensation in the forehead and eyes, lasting a half minute to two minutes. Sometimes he sat or stood while unconscious, but frequently he fell, bit his tongue, and urinated and defecated involuntarily. A few weeks before examination he had had eight attacks in twenty-four hours. Occasionally frontal and orbital headaches occurred after the attacks, but otherwise headaches were not persistent or severe. His greatest concern was his inability to hold a position as printer, for his employers were afraid of his being injured by machinery during these attacks. Except for these seizures he felt perfectly well and had had no mental disability.

The patient came to the clinic alone and there was no opportunity to get a description of his seizures. At the first examination he seemed physically well and was advised to return for completion of examination the next day. After an absence of three days he was admitted as an emergency case to the hospital in a stuporous condition. According to his landlady, he had apparently been well the first day, although depressed. The second day he complained of severe headache and remained in bed most of the day. The third day he was worse, did not take food and complained bitterly of headache and nausea. The day of his admission to the hospital he had become drowsy and stuporous, vomited and had a convulsion.

In the hospital the patient did not talk and responded poorly to stimulation. Ophthalmoscopic examination showed the right optic disk to be slightly elevated on the nasal side but the left optic disk was normal. The pupils did not respond to light, all tendon reflexes were active and equal, there was no muscular weakness, and

Babinski's sign was absent. The stupor increased throughout the day and the patient died in the evening without regaining consciousness. Necropsy showed a hemorrhagic, cystic glioma of the left temporal and frontal lobes. There had been a terminal hemorrhage into the tumor.

*Comment.*—This type of death is by no means uncommon in cases of tumor of the brain. The rapid and sudden change in the patient's condition is extremely disconcerting when a diagnosis of epilepsy has been made and a grave prognosis has not been offered. However, in spite of this case and Cases 1, 2 and 3, it must be insisted that in most cases such a sequence of events is fortunately not the rule. The more usual situation is illustrated in Case 5.

*Case 5.*—A woman, aged fifty-six years, first came to The Mayo Clinic June 7, 1922, complaining of convulsive attacks, epileptiform in character. She had had her first convulsion two years before. The attacks occurred every three months, were moderately severe, but symptoms were absent between attacks, except for slight failure in memory. She did not remain at the clinic to complete her examination. A diagnosis was not made. The patient was seen again January 25, 1925. This time, however, she was brought to the clinic in an ambulance and was in deep stupor. In the interval the attacks had become more frequent and more severe and were preceded by transitory unpleasant tastes and odors. A year before this admission the attacks had ceased suddenly and had remained absent for eight months, but mentally the patient became dull, forgetful and apathetic. Two months before the second visit all symptoms returned and were more severe. Headaches, nausea and vomiting came between the convulsions, and, following a more severe convulsion a few days before admission, complete left hemiplegia had developed with progressive stupor and involuntary urination.

Examination was limited because of the stupor, but complete flaccid paralysis of the left side of the body was noted. Eye grounds were normal and the spinal fluid was not under great pressure. Because of the history of convulsions with olfactory and gustatory aura, the left hemiplegia and progressive downward course, a diagnosis was made of tumor in the right temporal lobe. The patient died four weeks later and necropsy proved this diagnosis to be correct.

*Comment.*—In this case the period of convulsions as a solitary symptom of tumor of the brain was only three years. The whole course of the disease, as judged by symptoms, was four and a half years. Presumably a correct diagnosis could have been established during the last eighteen months, and possibly earlier, for the increase in frequency and severity of convulsions and the appearance of uncinat symptoms would have indicated a progressive gross cerebral disease, and

very soon other signs appeared which would have confirmed the suspicion.

#### GENERAL COMMENT

The relatively long period these patients had convulsions before any other symptoms appeared and the exact relationship of the tumor to the convulsive seizures are problems of interest. In a previous study<sup>3</sup> emphasis was placed on the relatively small number of cases in which convulsive seizures occurred during the course of intracranial tumor. This is actually only 21.6 per cent of the 313 cases, and for every case in which convulsions were associated with the tumor of a certain character in a certain situation, one or more other cases could be demonstrated of an identical nature, but convulsions had never been a prominent symptom. It may be assumed, therefore, that although convulsive seizures are relatively more common in cases of intracranial tumor than in the general run of disorders, some other factor than the tumor itself must be held responsible for the appearance of the convulsions. Four and one-tenth per cent represents the greatest number of cases of tumor that might have been mistaken in the beginning for cases of epilepsy.

From the standpoint as to the relative incidence of tumor in cases that have been diagnosed as epilepsy, some interesting figures are now available. In necropsy cases at Craig Colony cerebral tumor was found to be present in 2 per cent, and in a group of necropsy cases in Australia the incidence was 3.5 per cent. Lennox and Cobb, in a recent article drawn from the study of a large number of non-institutionalized, adult epileptic patients, have found the incidence of tumor to be 3.5 per cent. Therefore, if an adult patient has had convulsions for a relatively short time without manifest signs or symptoms of

disease other than convulsions, the possibility of the presence of tumor cannot be estimated as more than from 3 to 4 per cent. Obviously the shorter the history and the fewer the convulsions the more guarded should be both diagnosis and prognosis. It is better to confess ignorance and doubt than to proceed to label the condition with a hard and fast diagnosis that is to last for all time. If tumor is suspected, the diagnosis may be confirmed early and well in advance of clinical signs and symptoms by ventriculography and encephalography. This, however, cannot be recommended as a routine procedure in all cases of convulsive seizures and these tests carry their own fallacies and possibilities of misinterpretation. A more conservative plan of waiting and frequent, careful examinations with an open diagnosis is wiser in cases of adult patients in which convulsive seizures have developed recently. At no time should the possibility of tumor be forgotten and an effort should be made to exclude its presence by careful examination. At the same time it is of some comfort to know that the margin of error is no more than between 3 and 4 per cent and there is plenty of time in which to make a correct diagnosis. In the majority of cases of cerebral tumor a diagnosis is possible early, and correspondingly in most cases in which epilepsy has been diagnosed the possibility of tumor is not great.

#### BIBLIOGRAPHY

1. Lennox, W. G., and Cobb, Stanley: *Epilepsy*. Baltimore, Williams and Wilkins Company, 1928, 186 pp.
2. Lennox, W. G., and Cobb, Stanley: *The noninstitutional epileptic: A preliminary report of the Association's cooperative study*. Unpublished data.
3. Parker, H. L.: *Epileptiform convulsions: The incidence of attacks in cases of intracranial tumor*. *Arch. Neurol. and Psychiat.*, 23:1032-1041 (May), 1930.



## BACKACHE FROM THE ORTHOPEDIC VIEWPOINT\*

RALPH K. GHORMLEY, M.D.  
Rochester, Minnesota

**W**HETHER or not modern methods of living have actually increased the incidence of the complaint "backache" cannot be determined. It may be surmised that riding in automobiles has caused at least a small increase in the number of such cases. In order to furnish a basis for considering this complaint, I have reviewed 100 consecutive cases of pain in the back; it was not the chief complaint in all cases, but in most it was one of the major complaints.

Forty per cent of the patients were men and sixty per cent were women; about 75 per cent were between the ages of thirty and fifty years and none was aged less than twenty years. Although statistics would vary in a larger series of cases, they nevertheless furnish a fair basis for comparison (tabulation).

### TABULATION

#### CAUSES OF PAIN IN 100 CASES OF BACKACHE

	Cases
Sacro-iliac affections .....	32
Lumbosacral affections .....	23
Lumbosacral strain .....	9
Anomalies of the fifth lumbar vertebra.....	4
Narrow fifth lumbar disk.....	4
Calcified iliolumbar ligaments.....	4
Spondylolisthesis .....	2
Arthritis (including spondylitis deformans).....	24
Postural strain .....	5
Old fractures .....	4
Old Pott's disease.....	3
Scoliosis .....	2
Adolescent round back.....	2
Paget's disease .....	1
Congenital anomaly of the first, second and third lumbar vertebrae.....	1
Metastatic malignant disease.....	1
Congenital anomaly of sacrum.....	1
Tumor of the cauda equina.....	1

#### SACRO-ILIAC AFFECTIONS

The predominance of sacro-iliac affections is not as great as would seem to be indicated, because several cases have been included in which the lumbosacral as well as the sacro-iliac joints appeared to be affected. Cases are included of arthritis and of strain, unilateral and bilateral. Accurate distinction between strain and arthritis in these joints is often difficult, unless the arthritis is a part of generalized arthritis of the

spine. More often the arthritis is traumatic, due to the long-continued strain to which these joints are subjected, and in most cases of so-called strain originate in early arthritis of traumatic origin. The symptoms of this condition are not always clearly defined.

The most significant physical signs are pain localized over one or both sacro-iliac joints with or without sciatic radiation, tenderness on pressure over the posterior sacro-iliac ligaments, and over the region supplied by the superior gluteal nerves, pain on internal rotation of the femur on the side affected due to the pull on the external rotators of the hip joint which attach across the sacro-iliac joint, and limitation of straight leg raising; the last is usually dependent on the presence or absence of sciatic pain with its accompanying spasm of the hamstring muscles. In the more acute cases there is usually a good deal of spasm of the erector spinae muscles and there may be a lateral list of the spine, usually away from the side affected (sciatic scoliosis). An almost constant observation in such cases is pain on pressure over the anterior sacro-iliac ligaments on rectal examination. The roentgenogram is not particularly helpful in making a diagnosis. In good stereoscopic pictures changes can be detected in many cases, but a single flat roentgenogram is often misleading and too much stress should not be placed on its interpretation.

#### LUMBOSACRAL AFFECTIONS

In many cases signs pointing to involvement of the lumbosacral joint accompany signs of sacro-iliac affection. Usually there is tenderness over the fifth lumbar spinous process on heavy percussion and there may or may not be tenderness laterally over the transverse processes. These lie deeply imbedded beneath the muscles, and pressure there, except if subjects are thin, is often not the cause of pain. Many believe, however, that the distinction between sacro-iliac and lumbosacral lesions cannot be clearly drawn in some cases. This no doubt is true because of the complex ligamentous structure holding these joints together. It is easy to see how strain or

\*From the Section on Orthopedic Surgery, The Mayo Clinic, Rochester, Minnesota. Read before the Southern Minnesota Medical Association, Mankato, August 25, 1930.

arthritis involving one joint may throw an added burden on the other joints and thus produce symptoms referable not only to the original joint, but to both of the others.

important changes have taken place, among which are the shortening of the lumbar trunk and the widening of the pelvic base. This process of evolution is perhaps not complete. It is be-

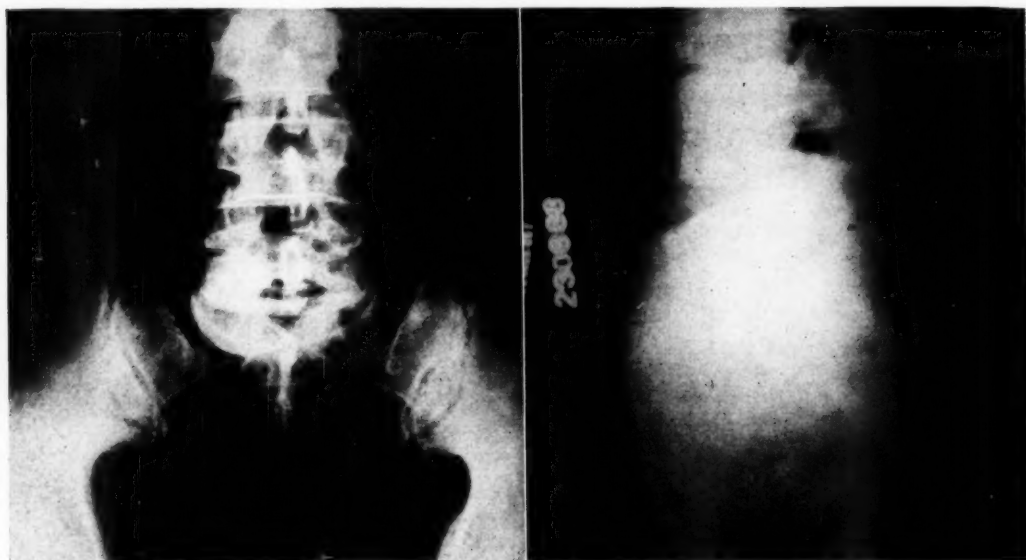


Fig. 1. The roentgenograms show narrowing of the intervertebral disk between the fifth lumbar vertebra and the sacrum, and also some change between the fourth and fifth lumbar vertebrae.

Congenital anomalies of the lumbosacral area are: sacralization, either unilateral or bilateral, spina bifida, anomalies of the articular facets between the fifth lumbar vertebra and the sacrum (Goldthwait), and anomalies in the laminae. All of these have been considered as etiologic factors. I believe that spina bifida, except in the presence of actual change in the nerves, is rarely, if ever, the cause of backache. Sacralization may be the cause, but sacralization produces a firmer type of joint, and careful examination of a good lateral roentgenogram usually shows the fifth lumbar vertebra fused to the sacrum. This would exclude any possible motion except between this joint and the vertebra above.<sup>2</sup> Anomalies of the laminae causing weakening, which some observers believe to be the cause of spondylolisthesis, can only be demonstrated in the best stereoscopic roentgenograms. Keith stated that there is no evidence to suppose that the separation of the arch of the last lumbar vertebra is the result of maldevelopment. Keith also considered the evolution of the human spine, pointing out that from the quadruped posture to the erect posture many

cause of this that so many anomalies are found in this region. The trunks of our predecessors were longer and not so heavily built. The sacrum was placed more on a plane with the rest of the spinal column. In the change from the horizontal to the erect posture a much greater strain has been thrown both on the lumbosacral and on the sacro-iliac joints. Lumbar lordosis has developed; in some cases it is exaggerated so that the angle between the sacrum and the lumbar portion of the spinal column is almost a right angle. This no doubt places an undue strain on the ligaments supporting this area and tends to produce strain. These evolutionary changes, therefore, must be recorded as definite predisposing factors in many of these cases of low backache.

Another condition met with frequently enough to warrant special consideration is partial destruction of the intervertebral disk between the fifth lumbar vertebra and the sacrum (Figs. 1 and 2). This condition was noted in four cases of the series. Trauma is usually the cause; a severe injury may cause partial rupture of the disk

which is not recognized at the time, but which gradually leads to diminution in the thickness of the disk with probable fibrosis of the cartilage. Often in such cases there is a history of recur-

lumbar angle, is of considerable importance in their interpretation.

Spondylolisthesis was found in two cases of the series. In one of the cases it appeared to be su-



Fig. 2. Narrowed disk between the fifth lumbar vertebra and the sacrum with some calcification along the margin of the disk, best shown in the anteroposterior view.

rent attacks of pain, rather severe at the time and clearing up in two or three days. Except for tenderness over the lumbosacral area and more or less spasm of the lumbar muscles, the results of general examination are negative and a lateral roentgenogram centered over this area must be relied on to make the diagnosis. The pathologic change in these cases must be similar in many respects to that seen in spondylolisthesis; hence the treatment should be similar. In many of the cases a brace or high-backed belt or corset will suffice, although a fusion type of operation is indicated.<sup>1</sup>

In the anteroposterior view of the lumbosacral portion of the spinal column one may occasionally see a definitely calcified band running from the transverse processes of the fifth lumbar vertebra to the iliac crests. The iliolumbar ligaments are heavy structures whose attachments are such that they support the fourth and fifth lumbar vertebrae, as well as the upper portion of the sacrum, acting as slings with their attachments to the anterior surface of the ilium. The exact significance of this calcification is not clear, but the fact that it is usually seen associated with pain low in the back, particularly referred to the ilio-

perimposed on a congenital anomaly. In the other case traumatism was the cause. The diagnosis in the more severe types of the condition is usually not difficult, even without roentgenologic examination. In all cases it should be discovered in a good lateral roentgenogram centered over the lumbosacral joint. The treatment should be operative with an autogenous bone transplant. A brace may relieve the pain, but usually it has to be worn indefinitely.

#### ARTHRITIS OF THE SPINE (INCLUDING SPONDYLITIS DEFORMANS)

Arthritis was diagnosed in twenty-four cases. The term arthritis refers to at least three types:

The first type is so-called hypertrophic arthritis or osteo-arthritis, in which the roentgenogram shows hypertrophic spurs about the margins of the vertebral bodies and around the articular facets. These hypertrophic changes are significant. They may often occur without symptoms. However, when a more or less severe strain is superimposed on such a spine symptoms are produced and treatment must be commenced. Usually the pain occurs after periods of rest, and wears off after periods of activity.

In the second type are cases in which the roentgenograms show, besides a moderate amount of spur formation, a definite atrophic condition of the vertebral bodies, which is not clearly under-

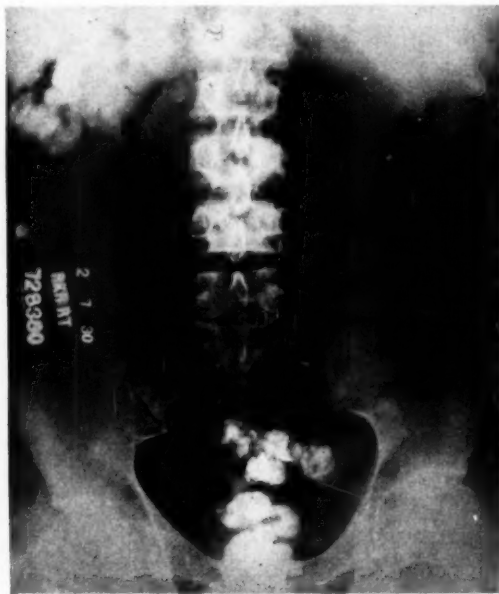


Fig. 3. Arthritis of the lumbar spine, gonorrheal in origin. Changes in the articular facets of the third and fourth lumbar vertebrae on the left may be noted.

stood. It is not entirely due to disuse. It usually occurs in older persons and may in the more advanced cases be accompanied by a pathologic fracture. It is not typical osteomalacia, although it has some resemblance to this condition.

The third type is again quite different in that its change is primarily in the ligaments, which by almost complete calcification finally fuse the spine into one solid rod. I refer to what is usually spoken of as spondylitis deformans of the Marie-Strümpell type. Little is known about the etiology of this condition, although it is classified as arthritis. The process is usually confined to the spinal column and sacro-iliac joints. The change is apparently primarily in the ligamentous structures, which become calcified. Subsequently the intervertebral disks and articular facets become involved. The end-result is the "poker spine." The main complaint is stiffness. Pain is usually not severe although it may be quite troublesome. One case is of special interest because of its unusual character.

A man, aged thirty years, following acute urethritis seventeen months previous to his admission to The

Mayo Clinic, had had active acute arthritis of the right knee. At about the same time he had had severe pain in the lumbar region which lasted about two weeks and then subsided. Since that time he had had occasional attacks of rather severe pain in the lumbar region for two or three days. Examination disclosed rather marked limitation of motion of the lumbar portion of the spine, but without much tenderness or pain. The roentgenogram (Fig. 3) revealed a rather unusual picture. In the stereoscope one could see actual destruction of one articular facet and partial destruction of another. Also there was considerable periosteal proliferation about that area. Because of the coincidence with what seemed to be typical gonorrheal arthritis of the knee it was felt that this was of the same origin involving the articular facets of two lumbar vertebrae.

#### POSTURAL STRAIN

Five cases are classified in this group. In the main there are two types of backache due to faulty posture: that experienced by the large heavy person with a heavy abdomen, causing a constant drag on the ligaments and producing symptoms, and that experienced by the thin person with poor musculature who stands with round shoulders and marked lordosis. In many of the other conditions also, posture plays a certain part in the production of symptoms, since many of these patients are relieved when the strain of standing is removed. One may easily be too much inclined to regard faulty posture as the cause of many backaches, but it does no doubt exist as a factor and postural exercises carefully supervised will be of help in many cases.

#### OLD FRACTURES

In four cases of the series old compression fractures of the vertebrae were present. Two were in the midthoracic region and two in the thoracolumbar region. In only two cases was the pain severe, and in these the condition had not been recognized previously. Owing to radiation of pain the complaints had been of abdominal distress. In such cases a lateral roentgenogram of the thoracolumbar portion of the spine may clear up the diagnosis at once. It may be wise to operate in a few cases, although in many cases a brace and baking and massage over a period of a few weeks afford relief.

#### OLD POTT'S DISEASE

Old Pott's disease was discovered in three cases. In one case the symptoms were mild, the condition having apparently healed spontaneously.



In the other two cases symptoms had existed for a year or more. The pain in tuberculous spondylitis is rarely severe and may often be endured for months before the patient consults a physician, usually on account of deformity. The stage of deformity, however, is too late in which to get the best results from treatment, which should be operative on adult patients unless contra-indicated by other complicating conditions.

#### MISCELLANEOUS CONDITIONS

Scoliosis with nerve root pain, adolescent round back, Paget's disease, wedged vertebrae due to congenital anomaly, metastatic malignant disease, congenital anomaly of the sacrum with secondary changes in the cauda equina, and tumor of the cauda equina were among other conditions discovered. These conditions are not common, it is true, but they may be considered as possibilities. Malignant disease should always be suspected when intractable pain is present. It is the most persistent and the most severe type of pain in lesions of the spinal column. It usually does not respond to rest or fixation of any type and often can only be controlled by heavy doses of opiates or by cordotomy.

Tumor of the cauda equina should be a reminder that the central nervous system should be considered in all cases of backache. Neurologic consultations were called for in twenty-six cases of the series. Positive data other than sciatica were found in two cases only. Neurologic examination made as a routine in all cases would be desirable, but as one becomes more familiar with such cases it is possible to select the suspected neurologic cases. In many cases of sciatica such examinations are done. If the pain is not typically sciatic or if it is felt that the diagnosis is not adequate, the neurologist should be consulted.

#### TREATMENT

In general the same principles of treatment apply to the spinal column as to other joints, such as rest either by fixation by some form of splint

or support, or in bed, and traction, heat and massage properly applied. No particular type of support is recommended. Women may wear a good, properly fitted corset. The use of extra pads and straps is not necessary, but it is important to have an exact fit. In cases of sacro-iliac affections a belt around the pelvis helps greatly. In cases of lumbosacral affections it is necessary to run the support up along the lumbar portion of the spine to the thoracolumbar region. The use of physiotherapy is usually indicated. Baking, massage and graduated exercises are the most helpful procedures in this line.

What is more important perhaps than the type of support used, is the reassurance given the patient that his condition is not serious, and that he can be cured. His activities must be regulated and his coöperation must be secured. Too many such patients go from one physician to another and to osteopaths and chiropractors, and thus their troubles are prolonged. They must be made to realize this, and when they do realize it they will be better satisfied and will respond to treatment more quickly.

There is a decided tendency toward operative treatment of the lumbosacral and sacro-iliac disorders. The wide variety of opinions among orthopedic surgeons regarding such operation can mean only that the surgeons are dissatisfied with the operative results. Excellent results may be obtained from operative treatment, but cases must be carefully selected and accurate diagnosis must be made. Even then the question arises: will the patient get well on the long postoperative regimen which is essential if operation is not performed?

#### BIBLIOGRAPHY

1. Ayers, C. E.: Lumbo-sacral backache. *New England Jour. Med.*, 200:592-608 (March 21), 1929.
2. Brackett, E. G.: The treatment of disabilities resulting from low back derangements. *Jour. Bone and Joint Surg.*, 12:325-332 (April), 1930.
3. Keith, Arthur: Man's posture: its evolution and disorders. *Brit. Med. Jour.*, 1:499-502 (March 4), 1923.

## THE IMPORTANCE OF TOXIC GOITER COMPLICATING OR COMPLICATED BY OTHER CONDITIONS REQUIRING SURGICAL INTERFERENCE\*

CHARLES MAYO, 2nd, M.D.  
Fellow in Surgery, The Mayo Foundation  
Rochester, Minnesota

A PRECEPT handed down from surgeon to surgeon is that if one of two coexistent operative conditions is toxic goiter (exophthalmic goiter or adenomatous goiter with hyperthyroidism), the goiter should always be given attention first. It seemed wise to consider the reasons for the initiation of such a precept and to try to determine the truth or falsity of it.

The relative importance of this matter can be realized by considering the frequency with which two such conditions do exist in the same person. At The Mayo Clinic, in 1927, 2.37 per cent of the patients with exophthalmic goiter and 7.3 per cent of those with toxic adenoma had complicating conditions which required operation.

There is no question but that, today, the picture of toxic goiter, in most sections of the country, is entirely different from that which was prevalent only a few years ago. The milder form has been brought about by education, prophylaxis with iodine, and surgical treatment at an early stage of the disease. Uncomplicated, the risk in those cases seen in former years brought premature gray hair to many a doctor's head. These patients needed little in the way of surgical shock to throw them into a state of post-operative toxemia, which resulted too frequently in death.

The clinical picture in such a case is represented by a sudden rapid rise in temperature and pulse, out of proportion to that which would be expected from the surgical procedure involved. Both remain relatively high. The pulse, as time goes on, due to added strain on the heart, becomes irregular. Maybe fibrillation enters the picture, and in quality the pulse becomes weak and thready. The patient sweats freely; respiration gradually becomes rapid and shallow; vomiting and delirium may develop, and, as the progress is uninterrupted, diarrhea, coma and death follow.

When two diseases coexist, one of which is

concerned with the thyroid gland, and when care in the development of a complete history of the case is not taken, often the condition of the thyroid gland may be overlooked, due to the fact that the patient's only complaint obviously points to the other disease. It is not amiss therefore to repeat an axiom that at all times one must be looking out for masked symptoms.

This may be more clearly illustrated by citing the case of a patient who entered the clinic with a draining sinus in the region of the gallbladder, following cholecystotomy performed elsewhere seven months previously. Attention obviously centered about the causes of such a condition. A complicating exophthalmic goiter was not recognized until just prior to a planned exploration. Possible trouble was thus fortunately averted. An interesting fact which developed during convalescence from the primary operation for the goiter was the appearance of a sponge at the outlet of the draining sinus. This was removed. A few days later, cholecystotomy was done, at which time two stones were removed. One was the size of a walnut; the other a smaller stone, the size of a filbert, was impacted in the cystic duct. Following this the patient made an uneventful recovery.

Occasionally, after operation, a condition simulating a mild thyroid crisis develops, but pre-operatively the complicating disease was unrecognized. Such a postoperative complication is mainly cardiac in nature, and it reacts favorably over a period of a few days to administration of compound solution of iodine (Lugol's solution). The possibility of such a cause for such a sequence of events must necessarily be kept in mind.

The following case may be taken as an example:

A married woman, aged forty-six years, came to the clinic August 17, 1926, complaining of "falling of the womb," which had gradually increased in severity in the last twenty-three years. She was the mother of eight children who were living and well, but her condi-

\*Read before the Southern Minnesota Medical Association, Mankato, Minnesota, August 25, 1930.

tion had become definitely worse following the birth of her last baby two years previously. The uterus and vaginal walls were so greatly prolapsed that they would have to be manually replaced after the patient walked across the floor. No other important features were brought out in the history.

General examination centered around the pelvis, and the diagnosis was of relaxation of the anterior and posterior vaginal walls, and cystocele, rectocele, and prolapse of the cervix and uterus, all graded 3. The fundus and fornices were normal. The blood pressure at the time of examination was 115 systolic and 70 diastolic. The pulse rate was 80 beats a minute. The tonsils were infected, graded 3.

August 24, the patient was operated on for the pelvic condition. The procedure was uneventful but post-operative progress was stormy. On the day after operation, the temperature exceeded 105° F. and the pulse rate varied between 125 and 160.

A medical consultant reported that the thyroid gland was enlarged, firm and slightly irregular but that no adenomas were found. A bruit, graded 1, was heard at each upper pole. Fine tremor, graded 2, was present. The systolic blood pressure was 132 and the diastolic 78. The consultant thought the patient's condition was probably due to a hyperthyroid reaction. He recommended that compound solution of iodine be given daily in doses of 50 drops, either by mouth or by proctoclysis.

The pulse and the temperature remained elevated. August 27, the cardiac rate was rapid and extrasystoles were present. Bronchopneumonia of the base of the right lung was suspected, but two days later the râles disappeared. The next day, auricular fibrillation was present, but the patient was improving. The temperature was normal and the pulse rate ranged from 80 to 95 beats each minute. Administration of compound solution of iodine was continued, 10 drops three times a day, and the patient was kept at complete rest.

By September 6, the basal metabolic rate was +13 per cent, the pulse rate was 76, the systolic blood pressure was 90 and the diastolic pressure, 50. When, on September 18, the basal metabolic rate was -4 per cent, the pulse rate 67, and the blood pressure 80 systolic and 38 diastolic, administration of compound solution of iodine was stopped.

Two days later, the patient was dismissed from the hospital. By September 23, the symptoms of hyperthyroidism had been completely checked, and on the following day, with a basal metabolic rate of +21 per cent, the patient was allowed to go home, with directions to return to the clinic in two weeks. She returned October 14, at which time her basal metabolic rate was found to be +13 per cent. She was advised to go home, not to take any medicine, and to return later.

November 18, the patient returned as requested. Examination revealed recurrence of the hyperthyroid condition since she had stopped taking compound solution of iodine. She had tremor, graded 2, and a basal metabolic rate of +29 per cent. Subtotal thyroidectomy was performed November 26. The pathologic report was of diffuse small colloid and fetal adenomas in a colloid thyroid gland. Parenchymatous hypertrophy

was not found. Clinically, however, the case was definitely one of exophthalmic goiter.

By the middle of December there had been gradual diminution of toxic symptoms. The patient was dismissed and advised to take compound solution of iodine, 10 drops daily for ten weeks. March 10, 1927, her basal metabolic rate was -5 per cent. Symptoms of hyperthyroidism had completely disappeared. Tonsillectomy was performed uneventfully at this time.

#### STUDY OF A SERIES OF CASES

In 1927 there were only four cases in which major operations preceded thyroidectomy by a few weeks to a few months, and of this number, two were cases of exophthalmic goiter and two of toxic adenoma.

In one of the cases of exophthalmic goiter and in one of the cases of toxic adenoma, the complicating goiter was recognized preoperatively, but thyroidectomy was advisedly deferred (the patient receiving compound solution of iodine meanwhile) until after more necessary operations had been done. In the other two cases the postoperative reaction brought to light the hyperthyroid condition and the condition of these patients, too, was satisfactorily controlled by compound solution of iodine, and subtotal thyroidectomy was performed later.

As an example of the type of case in which the two conditions are evident and thyroidectomy must be given a secondary place, I would cite a case in which there was a brachial arterial embolus of forty-eight hours' duration, and in which hyperthyroidism also was evident. The patient was hospitalized, compound solution of iodine was given and efforts were bent toward re-establishing collateral circulation. When these efforts failed, the arm was amputated on the eighth day, and the patient's postoperative progress was uneventful; there was no sign of thyroid crisis. Later, subtotal thyroidectomy was performed, and the pathologic report confirmed the clinical diagnosis of parenchymatous hypertrophy.

Because of the small number of cases in this group, it is unwise to draw conclusions. However, in forty-five cases, thyroidectomy for adenomatous goiter with hyperthyroidism preceded another major operation and in thirty-six cases thyroidectomy for exophthalmic goiter preceded another major operation. It is fair to ask whether it might not have been safe to reverse the order of procedure in these cases.

In order to answer such a question intelligently it is necessary to review, from the standpoint of risk and advantages, the cases of toxic goiter, exophthalmic goiter and adenomatous goiter in which thyroidectomy had been done as the preliminary measure.

The mortality of thyroidectomy for exophthalmic goiter and toxic adenoma uncomplicated by another condition for which operation was required averaged 0.76 per cent in 1927. There were no deaths as direct results of thyroidectomy being done as a measure preliminary to other operations. Although deaths occurred, one from bronchopneumonia following a two-stage Mikulicz operation for carcinoma of the colon and one from rupture into the peritoneum of a corio-epithelioma, they were not attributable to the primary thyroidectomy. Consequently, it can be considered that in a fairly representative group of cases of toxic goiter, preliminary thyroidectomy has not increased the risk, but, on the contrary, from the complications which it is known are likely to arise when preliminary thyroidectomy has not been considered, it tends to eliminate the toxemia of hyperthyroidism and thus to diminish the risk of future major operations. Therefore there should be little doubt as to the true value of the procedure.

Interesting facts developed in the course of perusal of these cases. Eighty-eight per cent of the patients were females; this explains the fact that there was a high proportion of gynecologic operations in this series. The average duration of symptoms of exophthalmic goiter was two and

a half years; the average duration of other complicating symptoms was two and eight-tenths years. Here it is well to call attention to the fact that, although the average figures would indicate close relationship between the onset and duration of these coexisting conditions, this is found not to be true when the individual case is studied. This, then, is an example of the false conclusions concerning particular groups of cases which might be reached from coincidental figures.

In the cases of toxic adenoma the average duration of symptoms of goiter was fifteen and three-fourths years, and the average duration of complicating symptoms was six years.

#### CONCLUSIONS

1. Generally speaking, thyroidectomy should be performed preliminary to other major operations when a toxic goiter (exophthalmic or adenomatous goiter with hyperthyroidism) coexists with another condition in which surgical intervention is required.

2. Should an acute condition arise, in which the judgment of the surgeon indicates that advantage would be gained by deferment of thyroidectomy, the importance of giving preoperatively compound solution of iodine as a prophylactic measure against thyroid crisis must not be overlooked.

3. Of the patients in whom hyperthyroidism coexists with another condition for which operation is required, about 88 per cent are females.

4. There is no causal relationship between the toxic goiter and the complicating disease.



## INTRA-ABDOMINAL ABSCESS

### REPORT OF CASES

P. E. STANGL, M.D.  
*St. Cloud, Minnesota*

FIFTEEN years ago I was confronted with a nine-year-old girl intensely ill. She had been sick for two weeks beginning with pain in the lower right abdomen and vomiting. She recovered, but toward the end of the second week pain developed in the lower abdomen with loss of strength. Examination revealed a septic child, with a temperature of 101, pulse of 120, respiration of 20, and moderate tenderness in lower left abdomen. The abdomen was flat and not rigid. The urine was normal; the leukocyte count 32,000 on two occasions. Light percussion of the abdomen revealed a mass in the lower left quadrant close to Poupart's ligament. Rectal examination revealed a tender bulging mass on the left. A diagnosis of intra-peritoneal abscess was made and the abscess opened and drained, with complete recovery in three weeks. She has been well since and is the mother of three children. The abscess wall was made up of omentum, small bowel and parietal peritoneum of the anterior abdominal wall. The absence of any great amount of literature on the subject and the fact that forty-two cases of like nature have been encountered, prompted me to correlate a few of the facts and make this report.

Perforated appendicitis with a circumscribed peritonitis about the appendix or accompanied by a diffuse peritonitis forms a basis for every case in this report.

Secondary intra-abdominal abscesses are classified as intra-peritoneal and extra-peritoneal. The intra-peritoneal type appears in three locations as one or more solitary abscesses which may be connected with each other. The protective barriers of the intra-peritoneal space are the omentum, bowel mesenteries and the parietal peritoneum and these wall off the suppurative exudate to form an abscess either in the right or left lower quadrant or in the pelvis about the bladder. The omentum in diffuse peritonitis helps to produce a localization of the peritonitis and this takes place usually about the portal of entry in the lower right quadrant. The abscess however may be walled off on the right side and may consist of more than one circumscribed ab-

cess as described above. These encapsulations, if not drained, either fuse and perforate the protective wall in from six to ten days reproducing a generalized peritonitis, or terminate as a fibrous peritonitis with resolution. Perforation of the bowel has been reported.

The extra-peritoneal type are found secondary to a circumscribed abscess about the head of the cecum and are most commonly found behind the cecum. These, if not drained, may extend behind the ascending colon to form a perinephritic abscess, or may continue upward, resulting in a subphrenic abscess. A right empyema occasionally completes the picture.

The cases under consideration comprise one or a combination of two, three or four of the above described localized abscesses.

Clinically these cases present themselves as perforating appendicitis with a diffuse peritonitis or localized peritonitis in the right lower quadrant. The stage of progress is determined by the number of days after the original onset. The secondary process appears either before or after the appendix is removed with drainage. In the usual case, drainage is followed by an abatement of the abdominal symptoms and then the case starts to go wrong on the sixth or seventh day with the appearance of an afternoon temperature and pulse rise. With the appearance of these hectic symptoms secondary abscesses should be looked for. The leukocyte count will increase from 13,000 to 30,000 and should be taken twice daily for two or three days and if it remains persistently high or increases, a secondary abscess is the usual finding. When the secondary symptoms appear about seven days after the original drainage, the insidious onset is more likely to indicate intra-peritoneal involvement, whereas a sudden ushering in with chills and fever is more apt to be extra-peritoneal.

Considerable stress should be placed on the rising leukocyte count, taken twice daily, and whenever present is almost positive indication of an active secondary process. In looking for the localization, the piano percussion of Murphy brings out the areas of induration more readily

than the usual palpation or heavy percussion. Diagnostic puncture is always admissible and is the more practical and safe procedure when used extra-peritoneally.

The only confusing differential issue may be a stitch abscess about the wound which appears about the fifth day. Careful examination with spreading of the wound will usually settle the question.

Once the diagnosis is made, free incision and drainage affords the best results. These drainage wounds should be large and left open, as the practice of partially suturing them is not good technic and often defeats the purpose of thorough drainage. Conservative handling of the abscess wall especially within the peritoneal cavity is imperative, as a diffuse peritonitis may be reproduced.

Fowler's position should be maintained at all times.

The reaction of intra-peritoneal pus is more pronounced when the abscess wall contains small bowel. Whenever the abscess wall is made up of omentum, parietal peritoneum and loops of the ascending or descending colon, the protection is as complete as nature can make it and if the surgical drainage is done with reasonable care a prompt recovery is certain.

*Case 1.*—A male, aged 63, was taken suddenly ill with chills and fever and moderate pain just above the right iliac crest posteriorly. Examination made two days after onset revealed a temperature of 102, pulse 100, respiration 20, a normal urine and a white blood count of 18,000. A slightly tender indurated mass was made out above the right iliac crest posteriorly. Diagnostic puncture revealed pus and under local anesthesia incision in the right flank and drainage of a large abscess was made. He returned in sixteen months with the same condition and the same treatment was instituted. Two years later he had another recurrence and another opening was made in the right flank through which a perforated appendix was removed. This was all done without going through the peritoneum. This represents the typical extra-peritoneal type.

*Case 2.*—A male, aged 17, complained of pain in the lower abdomen for two weeks. He stated that he had lifted a heavy barrel of ice and vomited for three

days following the supposed injury. He remained in bed the first week but the second week was up and about. Three days before examination he complained of painful urination. Examination revealed a rigid tender abdomen with the greatest tenderness over the region of the sigmoid. Rectal examination revealed a resistant tender mass in the lower left pelvis. Fluoroscopic examination revealed the barium in the rectum, which shot into the descending colon through a three-inch thread-like stream and filled the colon above. As the rectal pouch filled he complained of pain. His temperature at this time was 99, pulse 96, white blood count 13,000; the urine contained many pus cells. Diagnosis: secondary intra-peritoneal abscess of left lower quadrant. The abscess was opened and drained but the response was not good and on the sixth day after drainage an induration of the lower right quadrant with rigidity of right rectus was found. This was opened, drained and the appendix removed. The patient recovered.

*Case 3.*—Operation was performed on a female, aged 18, for a perforated appendix with localized right-sided abscess. Progress was good for six days, when hectic symptoms appeared. A retro-cecal abscess was opened through the right flank. Progress was again good for four days when the fever reappeared. The retro-cecal opening was enlarged and a deeper pocket was found and drained. Ten days later chills and fever appeared and the patient was intensely ill. Two days later a diagnostic needle revealed a subphrenic abscess and this was drained extra-pleurally. Two weeks later a right empyema was drained with resection of a rib in the posterior axillary line. She survived the ordeal, and is now in good health.

In conclusion, intra-abdominal abscess as outlined here is the secondary result of perforated appendicitis with generalized or circumscribed peritonitis. It should be suspected whenever evidence of infection manifests itself following abatement of the general abdominal condition. The leukocyte count is paramount in deciding the presence of pus in the body and should be repeated twice daily when in doubt. John B. Murphy originated the piano percussion in this work.

I hope that my classification of intra- and extra-peritoneal abscess will assist in correlating a definite entity under the complications of perforated appendicitis.

## CASE REPORTS

### ALCOHOLIC POLYNEURITIS WITH CRANIAL NERVE INVOLVEMENT: KORSAKOW SYNDROME\*

REPORT OF CASE

GORDON R. KAMMAN, M.D., F.A.C.P.  
*Saint Paul*

According to Bruch,<sup>1</sup> reports of cranial nerve involvement are relatively rare in the literature of alcoholic polyneuritis. In them paralysis of the vagi and of the phrenic nerves is usually given as the cause of death. Other cranial nerves subject to degenerative processes in chronic alcoholism are the vestibular, acoustic, oculomotor, and optic. The involvement may be either central (nuclear degeneration) or peripheral (demyelination, vacuolization, and granular degeneration of the nerve fibers). Because of the frequency with which mental changes accompany peripheral alcoholic neuritis, and also of the concomitant degenerative processes in the spinal cord, Campbell<sup>2</sup> said, as long ago as 1894, "Alcoholic polyneuritis can no longer be looked upon as restricted to an affection of the peripheral nerves." Along with cranial nerve involvement of peripheral or nuclear type, one may encounter the complex of an acute polioencephalitis.<sup>3</sup> I<sup>4</sup> reported such a case. It has been noted that patients with alcoholic ophthalmoplegia are particularly prone to the development of mental disturbances, especially of the Korsakow type. This report is that of a case in point.

L. E., male, single, aged 37, was admitted to the neurological service at the Ancker Hospital complaining of pain in the chest, blurred vision, difficulty in walking, and marked indecision. He was very confused, thought that he had just been discharged from the Army, and did not know just why he was in the hospital or who had sent him there. The family history was negative except for the fact that the father had committed suicide. The past history was negative except for a previous admission to the hospital for chronic alcoholism and delirium tremens.

The physical examination was grossly negative and all noteworthy findings were confined to the nervous system. The left pupil was slightly larger than the right and both reacted sluggishly to light and in accommodation. There was moderate congestion of both optic discs but the fundi were otherwise negative. Concerning the extraocular movements, convergence and movements upward and downward were normal. However, there was paralysis of lateral conjugate deviation to both right and left. In other words, the eyes seemed to be fixed in the mid-line as far as lateral movements were concerned, but that there was no paralysis of the internal recti is shown by the fact that convergence was normal. This indicates a nuclear or

a supra-nuclear lesion. There also was a slight involvement of the left abducens nerve (inward rotation of left eye) and nystagmus was present vertically. There was a spontaneous rotary nystagmus present upon a few occasions.

The upper extremities as well as the abdominal and cremasteric reflexes were normal. The lower extremities showed absent knee and ankle jerks with diffuse impairment of touch and pain senses distally. There was no atrophy, no fibrillary twitchings, and no pathological reflexes were elicited. The knee-heel test showed bilateral ataxia, the patient walked with a wide base and had a positive Romberg.

The mental examination showed that the patient was completely disoriented. He thought that it was 1919, and that he just had been discharged from the army. There was marked flight of ideas with overproductivity and increased psychomotor activity. The patient was hallucinated, frequently interrupted the examiner with questions directed at imaginary people, and was very distractible. The prevailing mood seemed to be one of euphoria and there was definite clouding of the sensorium. Many of his remarks were totally irrelevant to the situation then present, i.e.: "Well, boys, let's knock those spots off the ceiling." "Break off a piece of candy, won't you?" "We will have to get off pretty soon, some of the boys only have a dollar left." "You saw that lady that just passed—she is a peach."

Because of the unequal and sluggish pupils, the absent knee and ankle jerks, the gait, the Romberg, and the mental condition, the admitting officer made a tentative diagnosis of tabo-paresis. However, blood and spinal fluid examinations were negative and on the following day when I first saw him, the patient admitted having drunk about a pint of moonshine daily for the preceding two months. Because of the negative serum findings and the alcoholic history we felt that the patient was suffering from an alcoholic psychosis with polyneuritis involving some of the cranial nerves as well as those of the lower extremities. During the first two or three days in the hospital he was fairly quiet, the nystagmus began to subside, and within a week all of the extraocular movements had returned to normal except for an occasional vertical nystagmus. There also was some return of the knee jerks, but the ankle jerks remained absent.

On the third day after admission, and in spite of the improvement in his organic signs, the patient became worse mentally. He began to get noisy at night, thought that there was a case of beer under his bed, and was very restless. At first this was present only at night, but about fourteen days after admission the patient began to act peculiarly also during the day, showing the characteristic signs of a Korsakow psychosis. When asked where he had been the previous day he would recite a detailed account of various fancied experiences. One morning he said that he had been

\*Presented before the Ramsey County Medical Society, St. Paul, November 24, 1930.

down town the day before, bought a shirt for seventy-five cents and put it on while standing on top of a sewer pipe that evening. Once when a nurse was shampooing another patient's hair, he said, "I washed that guy's hair three times yesterday." Again, he said that he had been to a picture show and that everybody in the place had been killed. He then asked if most of the people taken out of the morgue really were dead. On another occasion a nurse asked him where his drinking cup was, and he said that he had left it in his other cell, that he had two rooms in the hospital and that he alternated, sleeping in each one every other night. The mental condition grew progressively worse, the patient became increasingly noisy during the day, would void in his drinking cup and say it tasted like tea, became irritable and destructive, and finally, on August 23, one month after admission, was transferred to the state hospital for the insane with a diagnosis of Korsakow's syndrome (Korsakow psychosis with polyneuritis).

On October 31st I received a communication from Dr. George H. Freeman, superintendent of the hospital, stating that all of the patient's cranial nerves were normal except for a slight vertical and lateral nystagmus. He walked with a broad base, had a positive Romberg, and the ankle jerks still were absent. Mentally, the patient was less confused, his memory had improved considerably, he was correctly oriented for place and person, but was somewhat confused as to dates. He no longer confabulated.

The above case is similar to others of its kind reported in the literature but is submitted for its clinical interest and comparative rarity.

#### REFERENCES

1. Bruch, Ernest: Zur Kasuistik der Polyneuritis Alcoholic. *Deutsch. Archiv. f. Klin. Med.*, 116:612, 1914.
2. Campbell, Alfred W.: A Contribution to the morbid anatomy of so-called polyneuritis alcoholia. *Quart. Jour. Inebr.*, 16:299 (October), 1894.
3. Coriat, I.: Alcoholic Neuritis. *Quart. Jour. Inebr.*, 29:56, 1907.
4. Kamman, Gordon R.: Alcohol and its effects on the nervous system. *Minn. Med.*, 10:153 (March), 1927.

1125 Lowry Medical Arts Building.

### HEMOCHROMATOSIS OR BRONZED DIABETES\*

#### REPORT OF CASE

H. A. MILLER, B.S., M.D., and J. J. HEIMARK, M.A., M.D.  
Fairmont, Minnesota

A male patient, J. E., forty-eight years old, came to the office January 18, 1930, complaining of weakness in the legs, weight loss, and dryness of the mouth. The patient was born near Fairmont, Minnesota. He was the proprietor of a grocery store, had been married sixteen years, and had no children.

The patient's parents were born in Scotland and came

to America a married couple when about twenty-five years of age. The mother is still living and about eighty years old. She had enjoyed good health. Her skin is fair. The father was a carpenter and engineer by trade and was a robust well man until the last four years of his life, when he had repeated attacks of severe asthma, which caused his death at the age of sixty-four. His skin was rather dark. The couple had six children, all born alive, one girl and five boys.

The first child, the only girl, was born in Scotland. She was in good health until about fifty years of age, when she died following an operation for exophthalmic goiter. Her face and arms were darker in color in comparison with other girls in the neighborhood.

Two brothers died when small and the patient did not remember them, nor did he learn the causes of their deaths.

One brother, forty-six years old, appears darkly bronzed, in fact even more so than the patient herein reported. In casual conversation with this brother he states he has stomach trouble that has been diagnosed "liver disease."

The youngest brother is thirty-seven years old, and in good health. He has the fairest skin of them all.

The patient knew nothing about his grandparents on either side.

The patient had suffered no accidental injuries, nor had he undergone any surgical operations. As a youngster he had had mumps, chickenpox and whooping cough, and at the age of thirty-eight a mild attack of inflammatory rheumatism. In February, 1929, he had a serious attack of pneumonia. He denied venereal disease. There was no history of occupational poisoning. He, as well as his wife and friends, maintained that his previous habits had been good. He had never used alcoholic beverages to any extent in earlier life and certainly not in later life. He likewise at the first time we saw him was not using any patent medicine, drops, nor prescribed medicine. At that time he smoked about a package of cigarettes a day.

The present complaint, as previously stated, was weakness in the legs, weight loss and dryness in the mouth. It is an interesting fact that the patient would not have come for an examination even at this time had there not been pressure brought to bear on him not only by his wife but also by a business associate.

The patient was apparently in his usual good health until in February, 1929, when he was very low with an attack of pneumonia. He recovered and gradually regained his strength and former weight of 167 pounds and by late spring and early summer of 1929 was feeling as well as usual and returned to his store work.

Around the latter part of August and the first part of September, 1929, he began to observe he did not have the usual physical strength and endurance of former years, while his legs would grow especially tired by evening. In the morning he felt well rested and refreshed. By the first part of October, realizing he was not improving, he concluded that his physical weakness was possibly caused by absorption of poisonous material from extensively involved dental pyorrhea. In four different sittings he had fifteen teeth extracted. No

\*Presented by Dr. J. J. Heimark, at the annual meeting of the Southern Minnesota Medical Association at Mankato, Minnesota, August 25, 1930.



complications followed and in due season he felt a little stronger, while his endurance was better the remainder of the fall and early winter of 1929.

At the beginning of 1930, he weighed 140 pounds and was feeling fairly strong. But from this time until January 18, when we first saw him, he had lost in weight and was down to 122 pounds. During this same space of time he first noticed he was craving more fluids than normally and drank considerable milk and water throughout the daytime, but never at night, though he voided once to three times at night. There was no history of polyphagia. The bowels were regular once a day without the aid of laxatives and there was no diarrhea nor suspicious discharge from the bowels. He had no history of jaundice nor cardiac trouble. He had had no edema of the legs, no cough nor chest trouble. The weakness in the legs was not associated with any symptoms of anesthesia nor paresthesia. The legs became tired and weak when he was behind the counter waiting on customers. No other symptoms concerning the mouth and tongue were elicited outside of the complaint that they were dry. His wife had observed that from September, 1929, the patient's skin had become definitely and gradually a darker brown than at any previous time. He denied having any pain.

In the physical examination the most striking and evident thing immediately observed was the marked bronzing of the face, neck and hands in contrast to the rest of the body, which showed only moderate discoloration. The sclera showed no jaundice beyond a yellowish haze. A definite acetone odor was noticeable to his breath. All his teeth were out. The tongue was beefy red and dry, in fact his mouth was so dry his articulation was impaired. The tonsils were small and free. No discoloration was seen on the mucous membranes in the mouth. No sentinel nor suspicious glands were palpable anywhere. The face, arms and legs showed emaciation two, on a basis of four, with a flabby dry skin and considerable loss of subcutaneous fat with atony of the muscles. There was no enlargement of the thyroid. The heart was not enlarged, while the sounds were apparently of normal quality and no murmurs were heard. The lungs revealed no adventitious sounds. The abdomen was definitely enlarged, with the entire lower liver margin extending diagonally into the abdominal cavity, the margin reaching the navel. (The patient had not observed that his liver was enlarged.) The spleen was not palpable. Apparently there was no free abdominal fluid, and palpation of the rest of the abdomen showed nothing abnormal. There was no hernia, varicocele nor edema of the scrotum and legs.

Rectal examination revealed nothing of significance. Neurologically, no pathological reflexes were elicited nor abnormal cutaneous sensations detected. The blood pressure was 150/86. Temperature 97. Pulse 70. The urinalysis showed: sp. gr. 1.033, acid reaction, amber color, no sediment, no albumin, while Haines' solution was reduced with one drop of urine. Microscopically numerous white blood cells were present and only an occasional red blood cell; likewise numerous hyaline casts. The leukocyte count was 4,800, while the hem-

oglobin was 95 per cent (Dare). The blood sugar was 270 milligrams. X-ray of the stomach was negative. Fearing esophageal varices because of the enlarged liver, we refrained from passing a stomach tube to determine the gastric function. The blood and spinal fluid Wassermann was negative. The next day, January 19, Dr. Miller removed a piece of skin from the left side of the neck and this was forwarded to the pathology department of the Mayo Clinic, for examination for the presence of hemosiderin or iron pigment, as we suspected we were dealing with a patient ill with hemochromatosis or bronzed diabetes. February 1, 1930, we received the report on the skin sent to them, confirming our suspicion.

Since the introduction of insulin in the treatment of diabetes mellitus, it has been found that bronzed diabetes or hemochromatosis is one of several other diseases or pathological conditions that shows resistance to insulin. Root reports a case of bronzed diabetes of approximately one year's duration. This case required gradually increased doses of insulin throughout the year. However, he died in coma in spite of the administration of 1,680 units of insulin in twenty-four hours. Whether or not bronzed diabetic patients prove to be insulin-resistant in every case, I do not know.

This patient showed apparently no resistance to insulin, and did very nicely on a diet of approximately 85 carbohydrates, 65 protein, 160 fats and 30 units of insulin a day. He, however, gradually developed edema of the legs and finally abdominal ascites, that could be relieved only from time to time by abdominal paracentesis. He was tapped the first time May 3, 1930. He continued a downward course in spite of supportive medical treatment and expired June 24, 1930, with the picture of acute gastric hemorrhage, caused apparently by the rupture of gastric esophageal varices. The skin, especially during the last two months of life, became more and more pigmented until he was almost black at the time of his death. The sclera maintained about the same yellowish tinge as seen at the first examination.

The liver, spleen, kidney and specimens of lymphoid tissues were forwarded to the pathology departments of the University of Minnesota and the Mayo Clinic.

McCartney of the pathology department of the University sent us the following report:

"The sections of the tissues sent show very characteristic appearances of hemochromatosis. The liver and lymph node show extremely large amounts of iron-containing pigment. The liver also shows cirrhosis. The spleen and kidney show pigmentation with an iron-staining pigment, but, in comparison with the liver and lymph nodes, only a small amount."

Habein, of the Mayo Clinic, forwarded the report on the tissues we sent him and the report shows:

"Liver—marked cirrhosis with extensive iron pigmentation of the hepatic parenchyma and connective tissues."

"Spleen—extensive fibrosis and iron pigmentation of capsule and to some extent of the connective tissue elements."

"Lymph node—extensive iron pigmentation of the reticulum."

"Kidney—iron pigmentation, slight, confined mostly to convoluted tubules."

"The diagnosis of hemochromatosis with severe cirrhosis of the liver is confirmed. (Dr. Robertson has seen the slides and agrees.)"

Signed: Dr. D. C. BEAVER.

Added to the pathological reports of the tissues here given, should have been included the picture of the pancreas. But being allowed, only after several days pleading with the family, what I should call a "grab bag" post-mortem examination, the pancreatic gland was missed. What we thought was a piece of the pancreas proved to be under microscopic examination a lymph node. A pathological report on the pancreas would have been most interesting. A comparative study of the changes in the pancreas with those of the liver and other tissues might possibly have explained why this patient was a mild diabetic as well as non-resistant to insulin. Clinically this patient was outstanding as a cirrhosis of the liver and passed out of the picture as such. Was it possible that the liver and lymphatic systems, which showed the heavier deposits of iron pigment as compared to the kidney and spleen, were carrying the burden of the pathology and that the pancreas was even at the time of the patient's death only slightly affected?

Root in his article refers to Sheldon's findings in one case of hemochromatosis in which the picture was hepatic insufficiency with abdominal ascites without glycosuria and the pancreas showed only .55 per cent concentration of iron. Sheldon also found that in all his cases diabetes was present where the iron concentration exceeded 1.5 per cent.

Textbooks devote only a few passing remarks to hemochromatosis or bronzed diabetes, give a bad prognosis and then dismiss the subject by stating the condition is a very rare disease. In bringing up the subject with Professor Berglund, Chief of the Department of Medicine at the University of Minnesota, this winter, I became deeply impressed with his review of the subject. Berglund stated, among other views, that Joslin accepted the diagnosis of bronzed diabetes only when the patient showed resistance to insulin. Berglund, however, was not ready yet to accept this view.

Is hemochromatosis a constitutional disease manifesting itself late in life with faulty iron elimination? Is there then, from infancy, a continual, gradual retention of iron pigment that insidiously works its havoc and after forty years or more of destructive work finally presents itself in full-blown regalia as evidenced by bronzing of the skin, enlargement of the liver, glycosuria, weight loss and muscular weakness? The significance, if any, of the discoloration in the patient's father and sister, is only conjectural. However, the patient's forty-six year old brother is certainly very dark brown or bronzed. In fact, he is more pigmented than the patient was the first time we examined him. We saw this man possibly six or eight times from the last part of January until his brother died, June 24, and we could not help but comment on the striking similarity of the skin pigmentation of the two. The added interesting thing, too, is that he has been diagnosed "liver trouble,"—broad as this term may be. That the brother has the same condition is probable and possible, and leads us to suspect that the etiology can be constitutional.

## LARGE BENIGN MOLE OF THE SCALP

### REPORT OF CASE

E. W. HUMPHREY, M.D.  
*Moorhead, Minnesota*

The patient, a laborer, fifty-one years of age, was admitted to Moorhead Clinic September 20, 1930. According to his family history his mother and five brothers were alive and well, while his father had died from an attack of pneumonia and his sister had died during confinement.

The patient had had no illnesses except scarlet fever and rheumatism when he was fifteen. While still a small boy he noticed a swelling or lump over the occipital region of the head, which continued to grow until it practically covered the occipital region with a base about half the size of the tumor. This mass resembled a large cauliflower in appearance, having many crevices and fissures upon its surface. Upon squeezing the tumor a thick cheesy exudate could be pressed from the part squeezed.

General examination failed to show, aside from some dental caries, any further abnormality. Laboratory examination showed the urine normal and the blood Wassermann was negative.

Under general anesthesia and the application of a tourniquet, the patient was operated upon September 21, 1930. The large mass was dissected off down to the periosteum of the bone. Large vessels were ligated and two weeks later skin was taken from the thigh and grafted over the entire surface.

The dissected tumor was sent to Dr. E. T. Bell's laboratory, where it was diagnosed as a benign mole of unusual size, containing a large amount of fibrous tissue. It extended down below the level of the incision.

According to the pathologist's report further operation was not advisable, since some of these moles extend deeply into the tissue. The report also stated that this type of mole sometimes recurs after removal, which, of course, greatly alarms the patient, but that recurrence of a benign mole is not malignant.

A differential diagnosis of growths of the scalp is at times very complicated, since the condition may be due to a variety of ways in which it originates. Some of these growths give way to malignant degeneration, while others remain benign. Benign moles of the scalp must be distinguished from elephantiasis of the scalp, which is a chronic and sporadic disease of the skin and subcutaneous tissues. It is characterized by enlargement, deformity, lymphangitis, swelling, thickening, and more or less papillary growth.

Verruca digitata is a formation of growth commonly observed on the scalp where clefts or digitations are sometimes found extending nearly down to the base. When the digitations do not extend completely to the base, the lower part or neck is sometimes relatively much smaller and the growth has then a pedunculated appearance, the upper cleft part tending to spread out somewhat.

Wens or sebaceous cysts of the scalp have little or no hairy covering. Ricker and Schwalbe in a monograph

on tumors of the skin reviewed the literature up to 1914 and found that forty-three cases of malignant degeneration in sebaceous cysts had been reported. Of this number, the scalp was affected in but seven pa-

Nevus vasculosus is both flat and elevated from the angiomata proper, the former being histologically primary angiectases without any capillary budding. They are sometimes congenital and sometimes acquired.

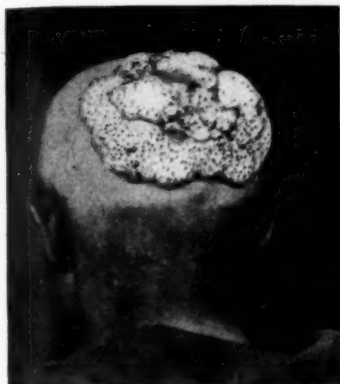


Fig. 1. Appearance before operation.

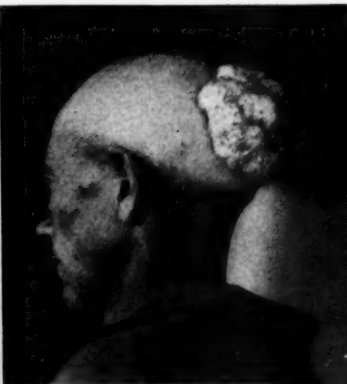


Fig. 2. Profile view before operation.

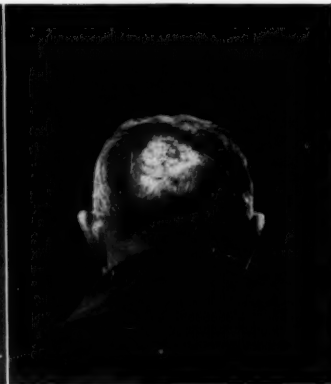


Fig. 3. Appearance six weeks following operation. Wound completely healed.

tients. Of 236 cases of sebaceous cysts excised at the Mayo Clinic only twelve were associated with malignancy and the scalp was involved only four times.

Cylindromatous tumors occur on the scalp, principally in women, as a lobulated growth covered with thin reddish blue skin, not spontaneously ulcerating and of long duration.

According to Tieche of Berne, Switzerland, the two main characteristics of nevi are the existence of the trouble from early life and the matter of their being benign.

A search through the literature in the Surgeon General's Library in Washington, D. C., has not revealed a case similar to the one here reported.

#### THERAPEUTIC POTENTIALITIES OF "MUSTARD GAS"

From time to time hopes are still entertained for some possible usefulness in medicine of "mustard gas," chemically known as dichlorethylsulphide. British and German investigators report that the dermal application of dichlorethylsulphide will prevent the development of the experimental cancer of tars. Forster of the Pharmacologic Institute at Würzburg has reported that dichlorethylsulphide in high dilution was the most efficient hair growth promoter of a considerable number of agents tried. Quantitative estimations of hair growth on shaved cats, treated locally with concentrations of 0.01 per cent of the compound in fifty per cent alcohol containing 2 per cent of glycerin, showed a much

greater production of hair than with other substances used. Impure yellow petrolatum, but not the pure white product, was next in efficiency to dichlorethylsulphide, this being attributed to impurities acting as irritants. Forster found that when agents are used that cause excoriation a diminution or inhibition of hair growth occurs, and he suggests that this may also occur after injudicious application of dichlorethylsulphide. Lest the results of this research on hair tonics in felines arouse premature hopes in the bald and near bald, it should be mentioned that not all shaved and bald skins responded equally well. Nor are all "war gases" necessarily effective, for the German cats, in Forster's hands, frankly declined to respond to the much vaunted "war gas" of the Allies. (Jour. A. M. A., January 3, 1931, p. 41.)

## PRESIDENT'S LETTER

**A**NOTHER secretary's conference is over, with its crowded program and its multiplicity of problems pushing for attention in one short day's session.

It was particularly impressed upon me at this 1931 meeting that the great task of preaching public obligations to the doctors is all but done.

When such obligations are seriously discussed, not as fancy flights to be indulged in at meeting times only, but as the sober essentials of the business of the smallest county medical society, the fight is as good as won.

It is vastly significant for the future of medicine that societies of only fourteen members and less should be acting systematically and collectively to take an important part in the public health education and direction in their communities. Hitherto they have left such things for the most part to the state office or to the highly organized large city societies.

That this is the new pre-occupation of the smallest units of organized medicine was clearly in evidence at the meeting. To foster it is the most important single thing any man or group of men can do for legitimate medical practice and the public good.

Two practical and important contributions to the effective conduct of the doctors' collective business were submitted by the conference visitors from Wisconsin and Iowa. Without doubt the employment of full time executive secretaries for county medical societies of centers even smaller than Milwaukee is the next step in county medical society organization. I found Mr. Wiprud's account of the year's business, under his management in the Milwaukee County Medical Society, significant and valuable. Many of our Minnesota societies are headed in the Milwaukee direction. Equally important to the other people of the medical organization was the account of the enterprising and active little Polk County Medical Society, outlined by Mr. George Larson of Frederic, Wisconsin.

In Iowa the care of indigent institutional sick by contract with the county medical society concerned is a well oiled, well organized system. It has been working there for years. Vernon D. Blank of Des Moines, managing director of the Iowa State Medical society, and enthusiastic sponsor of the scheme, told Minnesota conferees he thought it would do equally well in Minnesota. The contract plan is an interesting and attractive possible solution to the problems of many of our Minnesota societies.

The degree of coöperation and interdependence between the State Medical Association and the public health agencies dispensing many thousands of dollars of volunteer funds in Minnesota, as reflected in the afternoon's symposium, was a surprise to nearly everybody. This practical working alliance between two frequently antagonistic agencies has grown up so quietly that even those of us who have been directly concerned have not appreciated its full extent and importance.

Our secretary, E. A. Meyerding, read a paper outlining its history and workings very fully before the secretaries' conference of the American Medical Association in Chicago this year. The subsequent expressions of astonishment and interest indicate the uniqueness of the arrangement.

I cannot do better in this letter than to urge every member of the association to read Dr. Meyerding's paper in the January number of the *American Medical Association Bulletin*. He is sure to share my pride in our association.



President  
Minnesota State Medical Association.



# EDITORIAL

## MINNESOTA MEDICINE

*Official Journal Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine, and Minneapolis Surgical Society.*

Owned and Published by  
The Minnesota State Medical Association

Under the Direction of its  
EDITING AND PUBLISHING COMMITTEE

A. S. HAMILTON, M.D.	Minneapolis
D. C. BALFOUR, M.D.	Rochester
J. T. CHRISTISON, M.D.	St. Paul
E. L. GARDNER, M.D.	Minneapolis
JOHN M. ARMSTRONG, M.D.	St. Paul
R. E. FARR, M.D.	Minneapolis

CARL B. DRAKE, M.D., St. Paul, Editor  
Lewis M. Daniel, M.D., Minneapolis, Assistant Editor  
Associate Editors

A. B. Stewart, M.D., Owatonna	First District
F. M. Manson, M.D., Worthington	Second District
Geo. B. Weiser, M.D., New Ulm	Third District
H. B. Aitkens, M.D., LeSueur Center	Fourth District
F. U. Davis, M.D., Faribault	Fifth District
E. L. Gardner, M.D., Minneapolis	Sixth District
Paul Kenyon, M.D., Wadena	Seventh District
O. E. Locken, M.D., Crookston	Eighth District
E. L. Tuohy, M.D., Duluth	Ninth District

J. R. BRUCE, Business Manager  
2642 University Avenue, Saint Paul, Minnesota  
Telephone: Nestor 1381

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal itself, not to individuals.

The right is reserved to reject material submitted for either editorial or advertising columns. The Editing and Publishing Committee does not hold itself responsible for views expressed either in editorials or other articles when signed by the author.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

The rate for classified advertising is five cents per word with a minimum charge of \$1.00 for each insertion. Remittance should accompany order. Display advertising rates will be furnished on request.

Contents of this publication protected by copyright.

Subscription Price: \$3.00 per annum in advance. Single Copies 25c. Foreign Countries \$3.50 per annum.

Vol. XIV March, 1931 No. 3

## THE PSYCHOPATHIC HOSPITAL

The need of more adequate facilities for teaching psychiatry at the Medical School of the State University has been realized for some time by those who are acquainted with the situation. In the past about the only knowledge a medical student gained concerning mental diseases was obtained from a few theoretical lectures, a little reading and the occasional glimpse of a mental patient at one of the General Hospitals. On graduation he probably knew the definition of an hallucination, or an illusion, but of practical diagnosis and knowledge, almost nothing. The fault has not been with the teaching staff. They have done their best with time allotted and the

facilities and material at their disposal. It has been due to the lack of a Psychopathic Hospital on the Medical Campus.

The importance of bedside teaching is readily recognized and admitted in surgery and medicine. It is no less important in psychiatry. Realizing this defect, a plan was evolved, and tried during the past two years, of having the classes spend three weeks at the State Asylums. This was not successful, on account of lack of teaching organization at the hospitals and the short space of time.

Aside from teaching, the purpose of the hospital would be to act as a receiving hospital for many patients from the country districts, who are now sent direct to the State Asylums. Many of these patients are there only a short time before recovering and would not have been committed had the facilities of observation and a short period of treatment been available. Such cases would be saved the stigma of a commitment. It would also assist the Probate Courts and physicians of the country districts in solving many difficult problems relative to commitment. In this way it would also act as a clearing hospital from the country districts to the State Asylums.

One of the objections to such a hospital is the cost. At present in the State of Minnesota there are approximately as many beds for mental cases as there are for all other hospital cases combined. Some of the hospitals have a waiting list and they all are reported crowded. The cost of such a hospital, whose main function would be to disseminate knowledge about diseases which have created such appalling conditions, is well worth while when the problem is viewed as a whole.

Another objection suggested is that it would be another step toward state medicine. It wouldn't even be a stagger in that direction when these 60 to 100 beds are considered in view of the fact that well over 5,000 mental beds are now maintained by the State.

Another objection suggested is that private institutions now treating such cases will be adversely affected. It is understood that the hospital will be conducted along the general lines now in force at the University Hospital. It will be a charity institution, but it is estimated that

about 10 per cent admitted will be able to pay a part of their hospital expense. This situation now exists at the University Hospital. No private beds are contemplated. The experience at Colorado, where such a hospital is giving invaluable service, has been that worthy private institutions have been benefited by wider patronage by the public.

The situation will not be remedied until such a hospital is erected. It is earnestly hoped that the State Legislature will become cognizant of the problem and will heed the plea of the University for such a hospital on the Medical Campus.

GEORGE N. RUHBERG, M.D.

### WORK AND HAPPINESS

The capitalist assisted by the economist wanders at times from his own domain into the field of medical economics. We plead guilty to the offense of getting out of our own field in making the following observations.

Hamilton Fish recently presented a report of his investigation of communism in the United States. According to the report, there is an active organization in this Country working under the direction of Russian communistic leaders whose purpose it is to undermine our American economic system. This is doubtless of serious import. It is, however, of additional interest to hear that in the same report Mr. Fish asserts that Capitalism is on trial in this Country.

There is some reason to believe that we, as a nation, are money-mad—that money is our standard of value. A millionaire dies and leaves all his wealth to his few immediate heirs, ignoring all of the many social activities devoted to the betterment of his fellowmen. Of course, he may have donated liberally to various activities of this sort during his lifetime, and that is admittedly the more worthy way of giving. But does such an exhibition *post mortem* tend to counteract the spread of communistic ideas?

Have capitalism and big business fully appreciated their responsibilities? No! and never will entirely.

The attitude of big business towards the employee varies in the extreme. One large concern

we have in mind has developed an enviable reputation with the public and a devotion on the part of its employees. And why? Because somewhere at or near the top there is a someone who treats the employees as human beings and not simply as cogs in a soulless machine. Each employee is guaranteed a minimum hourly wage and a certain number of hours' work a week so that he knows what he can count on. Provision is made for an old age pension and employees are not discharged just before the pension age is reached.

Another large company we know something about is the exact antithesis of the above. Factories are closed unless they can be run at full capacity—it pays more. This results in periods of unemployment each year and the much vaunted high minimal daily wage amounts in a year's time to very poor pay. From the bottom up, employees are dismissed without consideration for length or quality of service rendered. Is there any wonder that there is little real esprit de corps in the organization?

Happiness is what we all are striving for. One achieves it in one way—one in another. On the whole (although there are those who would argue otherwise) work is one of the essentials for human happiness—work that is congenial and that brings the desired results. No one can be happy who fears the loss any moment of his livelihood. The anxiety incident to such a situation seems at times worse than actual unemployment itself. When an employee sees a total lack of consideration on the part of the employer for his employees as human beings, he is likely to despise his employer and hate his work. To him the whole world is wrong. Such a situation will often bring the employee to the verge of a nervous and mental collapse, as physicians have occasion to know.

So much for business methods in use in our Country in the twentieth century. Some argue that periods of more or less unemployment are necessary. Admittedly, some individuals are too lazy and useless ever to be entitled to a job. But such an extreme degree of unemployment as we are now experiencing should be preventable. The suffering entailed is much worse than that resulting from the so-called high cost of medical care. Whether the solution of the problem of preventing periods of financial depression lies in

a revision of sales methods to prevent overproduction or abolishing the gold standard (a varying medium of exchange) and substituting a non-fluctuating governmental currency—here is a field for the energy of the business man and economist where there is a challenge.

### HISTORY COMMITTEE

Will not some of you who read this "Historical Stuff" help to stimulate the gathering of material for our History of Medicine in Minnesota? Contribute something so we shall not have to think up new things from month to month to put in here. Our own knowledge of early medical men and events is largely confined to our own city and you may become tired of it. We long thought the first published medical communication came from a Minnesota physician in 1853, and Dr. J. H. Murphy contributed a note on abscess of the breast in 1854. A few months ago, however, we found an article written in 1815 and published in 1818 by the first medical officer at Fort Snelling, and a still shorter time ago we unexpectedly picked up Vol. I, No. 4 (January, 1859) of the *Minnesota Homeopath*, published in St. Paul. We had always thought Dr. A. J. Stevens' *Northwestern Medical and Surgical Journal* (1870-1874) the first in Minnesota. After looking over the *Homeopath*, however, we concluded it hardly merits the name of a journal, but nevertheless it gave us an historical, not hysterical, thrill. Write Dr. H. M. Workman, Tracy, Minnesota, if you know where any copies of the *Albert Lea Medical Journal* may be had. We would appreciate it.

J. M. A.

### OF GENERAL INTEREST

Dr. Sam E. Sweitzer and Dr. Henry E. Michelson were recently elected corresponding members of the Vienna Dermatological Society.

Dr. Stanley Chunn has disposed of his practice at Lake Wilson and is now located in Minneapolis, where he is taking a three-year fellowship at the University Hospital in the Department of Ophthalmology and Otolaryngology.

The Administration Committee of the University Medical School recently voted to use the terms Clinical Professor and Clinical Instructors in applying to faculty members giving voluntary part time service to the university. The distinction seems advisable.

Ground was broken Monday, February 16, for a new \$200,000 nurses' home for Charles T. Miller Hospital, St. Paul.

The structure, which will be completed next fall, will be five stories, constructed of brick and reinforced concrete and fireproofed throughout. It will include dormitory facilities for 133 nurses and the hospital's nurses' training school.

Dr. Clay Ray Murray, Associate Professor of Surgery at Columbia University, New York City, visited Minneapolis at the invitation of the Minneapolis Surgical Society. Dr. Murray spoke on "General Treatment of Fractures" at the Hennepin County Medical Society Auditorium, February 4, and conducted a clinic on fractures at the Minneapolis General Hospital the day following. At the annual meeting and banquet of the Minneapolis Surgical Society held at the Nicollet Hotel, February 5, the society was addressed by Dr. Murray on "Delay and Non-union of Fractures."

Word has been received of the death of Dr. Charles Bryant Witherle, who practiced in St. Paul for a number of years. Dr. Witherle died at his home in Portland, Maine, February 3, 1931. He was born in Castine, Maine, on January 15, 1855, and received his medical education at Harvard Medical School, where he was graduated with the degree of M.D. in 1881.

Dr. Witherle moved to St. Paul the following year and practiced there for fifteen years. He was at one time associated with Dr. William Davis and afterwards with Dr. Alex J. Stone. He was for several years editor of the *Northwestern Lancet* and was at one time secretary of the Minnesota State Medical Association. After leaving St. Paul, Dr. Witherle went to Portland, Maine, where he occupied the chair of Professor of Nervous and Mental Diseases for several years, in the Medical Department of Bowdoin College.

The formal opening of the new quarters and library rooms of the Ramsey County Medical Society was held on Friday evening, February 27. Dr. O. W. Holcomb, president of the Society, made the opening address. Dr. John M. Armstrong spoke on the founding of the Society, and Dr. H. Longstreet Taylor gave a short history of the County Medical Society. An historical address was tendered by Dr. Alfred Brown, Associate Professor of Surgery at the University of Nebraska School of Medicine.

On Saturday morning, February 28, the occasion was also celebrated by clinics and demonstrations held at St. Joseph's Hospital by Dr. William Boyd, Professor of Pathology at the University of Manitoba, Winnipeg, Manitoba; Dr. Sumner L. Koch, Associate Professor of Surgery at the Northwestern University Medical School, Chicago; and Dr. Fred M. Smith, Professor of Medicine at the University of Iowa, Iowa City, Iowa.

A reception for members and ladies was held Saturday afternoon at the new rooms. Besides President and Mrs. Holcomb, there were included in the receiving line, Mrs. George Bell, daughter of Dr. John J. Dewey, a pioneer St. Paul physician; Mrs. Everton J. Abbott, daughter of Dr. John Steele, a founder of the Society; Mrs. Charles Eastwick Smith, Sr., wife of Dr. C. E. Smith, a founder of the Society; Mrs. John W. Willis, daughter of Dr. Alfred Wharton, a founder of the Society; Mrs. John F. Fulton and Mrs. Edouard Boeckmann.

❖ A PAGE FORUM OF THE  
COMMITTEE ON PUBLIC HEALTH EDUCATION ❖

**"NON-MEDICAL INSURANCE"**

Recently one hundred and fourteen life insurance companies in the United States and Canada reported favorably on their experience with non-medical life insurance in America. The report was given by the companies comprising the American Life Convention at St. Louis. It covered approximately ten years' experience with this type of non-medical business since a Canadian company made its first non-medical experiment, shortly after the Great War.

What is the significance of this radical change in insurance practice?

Dr. C. N. McCloud, Medical Director and Vice President of the Minnesota Mutual Life Insurance Company, of St. Paul, has the following comments to make:

"The cursory, superficial insurance examination, ordinarily given by the insurance medical examiner, apparently bears no significant relation to the life prospects of the average healthy person under forty-five.

"That being the case there is no good reason why insurance companies should pay the large added medical bill for these restricted cases. In the last two years in the United States and Canada, insurance companies saved approximately \$9,000,000.00 in medical bills on their non-medical insurance business.

"Naturally a physician's examination is necessary beyond the age of forty-five and wherever there is a question about the health of the prospect."

Dr. E. K. Geer, St. Paul, who handles a considerable amount of insurance work for several companies, agrees with Dr. McCloud that the usual brief insurance examination is of no great significance, either to the patient or to the insurance company. He says:

"The favorable results reported by insurance companies with their non-medical business looks, on the face of it, like a rap at the medical profession.

"It is really a rap at the usual insurance examination, that is usually required. A real physical examination, to elicit all of the truth about a patient, is expensive and requires time. It is seldom done for the small fee normally allowed by insurance companies for the purpose.

"I am chiefly concerned with the effect that this reversal of insurance practice may have on the campaign for periodic health examinations for which they have been the most effective sponsors.

"Will public health work in America be seriously retarded by this new turn in life insurance practice? It seems to me a serious question."

'Non-medical insurance is written by agents who qualify for the privilege with their companies. It rests upon a keen layman's opinion of the general appearance of the prospect and the questionnaire concerning the history and heredity which he fills out. This report, is, of course, substantiated and checked with the confidential report provided by the effective detective service maintained by all life insurance companies.

It is written only for persons under forty-five and in some cases only for single women. In every case it is written only for small policies of not more than \$2,500.00.



## OBITUARY

### Bernard Stanton Bohling

1887-1930

Bernard Stanton Bohling was born in Cumberland, Iowa, August 4, 1887. At the age of seven he moved to Lewis, Iowa, where he was graduated from High School. He then attended Northwestern University, where he received his medical degree in 1912.

After serving his internship he went to Sandstone, Minnesota, where he practised his chosen profession until his death, December 20, 1930.

On April 4, 1914, he was united in marriage to Miss Doris Barr at Chicago, who, with two uncles, are the only relatives left to mourn his untimely end.

He joined the Masonic Lodge before he came to Sandstone and was Worshipful Master of Sandstone Lodge 254 A. F. & A. M. for two years.

During the World War he saw service in France in the Medical Corps. He was a member of the Chisago-Pine and Minnesota State Medical Societies and a Fellow of the A. M. A.

Dr. Bohling was a man of outstanding ability in his chosen profession and will be greatly missed by his medical associates. Sandstone has lost one of her most valuable citizens, but his memory will long remain.

### Dr. William Dodge

1856-1931

Dr. William Dodge died at his home in Los Angeles in January, 1931, at the age of seventy-three.

Born in Beetown, Wisconsin, on April 24, 1856, he spent his boyhood and received his early education there. In 1878, he was graduated from the Medical College of Keokuk, Iowa, and began practice at St. James, Minnesota. Four years later, he moved to Henderson, Minnesota, and after two years there, moved to Le Sueur in 1883. The same year, his first wife, Rose A. Simpson, passed away, leaving him two children, Laura and William Jr. In 1884 he married Lydia Smith of LeSueur. Two children, Alma and John, were born to them. After practicing four years in Le Sueur, at a time when practicing medicine was a rigorous occupation, he moved to California, where he has practiced in Los Angeles since. He was one of the organizers of the Los Angeles County Medical Society, and in 1893 was its president. In the early nineties, he was a devotee of horseback riding and owned a large stable of thoroughbreds. He was a founder and one of the presidents of the Los Angeles Riding Club.

Dr. Dodge was a descendant of a long line of physicians dating back to the Revolution. He was a member of the Hollenbeck Lodge of Masons, Al Malaikah Temple, and the Maccabees.

Shortly before his illness, he was the guest of honor at a meeting of the Los Angeles County Medical

Society, and was presented with a gold medal in recognition of his services.

Besides his widow and four children, he is survived by two brothers, Dr. Frank Dodge, of Le Sueur, and John Dodge, of Woonsocket, South Dakota.

## MISCELLANEOUS

### MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

#### MEXICAN "DOCTOR" SENTENCED TO WORKHOUSE State of Minnesota vs. Fernandez

Averlino Fernandez, twenty-seven years of age, formerly of Monterey, Mexico, was sentenced to one year in the Workhouse in the City of St. Paul by the Honorable John W. Boerner, Judge of the District Court, on January 12, 1931, following the entering of a plea of guilty by the defendant to a charge of practicing healing without a Basic Science Certificate. Defendant had been in St. Paul about sixty days at the time of his arrest. He had no medical experience, but had worked in a drug store in Monterey, Mexico. He confined his practice to the Mexican people in St. Paul and South St. Paul. Judge Boerner informed the defendant that if a future complaint was made against him he would be placed in the Workhouse and made to serve the sentence without any opportunity of having a trial.

In addition to the splendid attitude displayed by the Court, Mr. Brist, representing the State Board of Medical Examiners, reports a fine spirit of coöperation received from Michael F. Kinkead, County Attorney, Thomas A. Brown, chief, St. Paul Police Department, Sheriff Moeller of Ramsey County and Sheriff Maher of Washington County.

#### APPELLANT IN BASIC SCIENCE LAW CASE PLEADS GUILTY State of Minnesota vs. Broden

On Tuesday, December 16, 1930, A. H. Broden, the defendant in the above entitled action, entered a plea of guilty to practicing healing without a Basic Science Certificate in the District Court of Duluth. The Court imposed a fine of \$25.00.

It will be recalled that Broden, following his arrest on a charge of practicing healing without a Basic Science Certificate took his case to the Supreme Court, where, on the tenth day of October, 1930, the law was upheld. Broden claimed to be a Naprapath. He has been residing in Superior, Wisconsin, for some time, and this fact, coupled with the large expenditure made by the defendant in the appeal of the case to the Supreme Court, undoubtedly occasioned the modest fine imposed. It has been reported that Broden's health has been failing for some time, and that he is at present under the care of a physician and surgeon. Mr. Brist, attorney for the State Board of Medical Examiners, was not present in Court when the case was disposed of on account of the failure of Mr. Forbes, the County Attorney, to notify Mr. Brist that the case would be disposed of on that day.

## CONSULTATION BUREAU

WM. A. O'BRIEN, M.D., *Director*

Minnesota State Medical Association

11 West Summit Avenue

Saint Paul, Minnesota

1. *Question.*—I have under my care two men with chronic gonorrheal infections.

One, age 28, had infection for past five years, and has been under treatment intermittently for two years and constantly for past three months. During this latter period he has been treated twice a week with sounds up to F.32 followed by potassium permanganate irrigations of 1-5000 for three week periods and then prostatic massages twice a week for another three week period. Urine, glass No. 1, shows a very few shreds and is clear, and glass No. 2 shows one or two shreds occasionally and is clear. The mid-portion of the prostatic gland feels soft and examination of prostatic secretion under microscope shows fifty to sixty pus cells with a few clumps of four to six cells per high power field. He now has a small amount of watery secretion in the morning.

The reason for his taking treatment was a persistent ache at the base of the scrotum in the prostatic region. Since being under steady treatment, the patient states that at times this ache seems better and at other times worse; but there has not been constant steady improvement in this symptom.

The other patient, age 32 years, was treated from June to November, 1927, for a gonorrheal infection and discharged as cured. During that period he was treated with dilations with a Kollman dilator followed by .25 to .5 protargol and was given prostatic massages. He remained symptom-free until in May, 1930, when he began to have an ache at the base of the scrotum in the prostatic region.

He was married about March, 1930. He has been treated since July, 1930, in the same manner as the other case which has been just described. Urine, glass No. 1 at the present time is clear with three to five shreds, and glass No. 2 clear with very occasionally one shred. Examination of prostatic secretion under the microscope shows the high power field loaded with pus cells, which are occasionally clumped. The prostate gland now feels slightly larger than normal and firm. There is no other symptom except the ache mentioned before, and he does not notice this very much when he is busy or occupied.

These two cases I have diagnosed as chronic gonorrheal prostatitis, but the treatment given them has not improved their subjective symptoms, and the examination of the prostatic secretion has not shown improvement.

*Answer.*—These two cases are similar and will be discussed together. Persistent ache in the perineum is the chief complaint in both. Gonorrheal urethritis was acquired five years ago in the first and three and one-half years ago in the second case. There has been no urethral discharge for many months except for an occasional watery drop in case one. Gonococci have not been demonstrable in either case for more than a year. Voided urines show glass No. 1 clear with a few shreds and glass No. 2 clear with no shreds. Microscopic examinations of the expressed prostatic secretions show large numbers of pus cells.

Prolonged courses of treatment by prostatic massages, dilations of the urethra and irrigations or injections have only temporarily benefited both.

Further investigation of these cases is advisable before considering future treatment. The anterior urethra should be examined for mural infiltrations and enlarged and tender Littre glands by means of acorn exploratory bulbs and palpation over large sized sounds. The prostate and seminal vesicles are next investigated. These structures are best palpated bimanually. With the patient bent over and the elbows resting on the knees the examiner introduces the index finger of the right hand into the rectum well beyond the base of the prostate and the left hand is placed on the lower abdomen. By exerting pressure downward and inward with the left hand, the base of the bladder, the seminal vesicles and the prostate are brought down within easy reach of the examining finger. The size and consistency of the vesicles are noted and they are emptied of their contents by stripping with the finger. Palpation and massage of the prostate is then performed and the secretions are pushed downward into the anterior urethra and gathered on a slide for microscopic examination. The posterior urethra is examined for the presence of granulations with the urethroscope. Polyps, granulomata and lymphocystic bodies are not infrequently found in such cases and may entirely explain the symptoms complained of.

The results of these examinations will indicate the treatment. Mural infiltrations or enlarged tender Littre glands of the anterior urethra are treated by full dilatation with sounds and massage over these instruments, followed by permanganate lavages. Prostatic massages should be continued in both cases and performed vigorously enough to thoroughly empty the gland of all inflammatory products. This is best accomplished by the bimanual method described. Infected seminal vesicles are emptied by stripping at the same time the prostate is massaged. The secretions from these structures are collected and examined microscopically to determine the progress of the case. Dilatation of the posterior urethra with the Kollman dilator to 35 or 36F should be occasionally done before massage. Each treatment is concluded by an antero-posterior injection of 2 per cent mercurochrome. Occasional cases of seminal vesiculitis are very resistant to treatment. Puncture of the vas and injection of the vesicles with protargol solutions has been tried in such cases but is of doubtful value. Hot rectal douches several times daily will hasten resolution in the prostate and seminal vesicles. Granulations of the posterior urethra are destroyed by fulguration or by topical applications of 20 per cent silver nitrate solution through the endoscope.

It should be possible to relieve each of these patients of the perineal ache complained of if

(Continued on page 271)

## REPORTS AND ANNOUNCEMENTS OF SOCIETIES

### MEDICAL BROADCAST FOR THE MONTH

The Minnesota State Medical Association  
Morning Health Service

The Minnesota State Medical Association broadcasts weekly at 11:15 o'clock every Wednesday morning over Station WCCO, Minneapolis and St. Paul (810 kilocycles or 370.2 meters).

*Speaker:* William A. O'Brien, M.D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota.

The program for the month of March will be as follows:

- March 4—The Rheumatic Child
- March 11—Treatment of Insomnia
- March 18—Cause of Meningitis
- March 25—Cancer of the Bladder

### RICE COUNTY MEDICAL SOCIETY

The annual meeting of the Rice County Medical Society was held February 4 in the Main Building of the School for the Feeble Minded at Faribault, in conjunction with the Medical Auxiliary. Dinner was under the supervision of Dr. and Mrs. Murdoch and those present were entertained by the pupils of the school. The meeting was called to order by the president of the Society, Dr. J. M. Murdoch. Mrs. A. M. Hanson, president of the Auxiliary, preceded Dr. Horace Newhart of Minneapolis, who spoke on the subject of "Mastoid Possibilities."

C. J. PLONSKA, *Secretary*.

### WASHINGTON COUNTY MEDICAL SOCIETY

The Washington County Medical Society held its monthly meeting February 10, 1931.

After dinner the guest speaker, Dr. F. E. Burch of St. Paul, gave a very interesting illustrated lecture on "Strabismus." The doctor kindly answered a number of questions.

E. SIDNEY BOLEYN, M.D.,  
*Secretary*.

### WEST CENTRAL AND KANDIYOHI-SWIFT SOCIETIES

The West Central and Kandiyohi-Swift County Medical Societies held a joint meeting at Benson, January 21, 1931. A banquet was served at the Congregational Church Parlors.

Mr. Marcus Shellander of St. Mary's Hospital, Minneapolis, gave a demonstration of laboratory methods which are of practical value to the general practitioner. Mr. F. A. Augustin presented some movie films being shown by the Petrolagar Laboratories.

C. L. SCOTFIELD, *Secretary*.

### MINNESOTA RADIOLOGICAL SOCIETY

The midwinter meeting of the Minnesota Radiological Society was held February 14, 1931, at the Minnesota Club, St. Paul, Minnesota. The following program was presented:

Round Table Discussion of Cases of Diseases of the Bones and of the Thorax

Conducted by

DR. R. G. ALLISON, Minneapolis

Round Table Discussion of Cases of Diseases of the Gallbladder and of the Gastrointestinal Tract

Conducted by

DR. JOHN D. CAMP, Rochester

Roentgenologic Changes Seen in Cases in Boeck's Sarcoid and Related Lesions

DR. S. A. MORTON, Rochester

A Correlation of the Various Factors Involved in the Classification of Chronic Arthritis

DR. M. J. SHAPIRO, Minneapolis

Pulmonary Metastases

DR. EUGENE T. LEDDY, Rochester

The Medical Histories of Cases of Carcinoma of the Stomach

DR. JACOB SAGEL, Minneapolis

LEO G. RIGLER, M.D., *Secretary*.

### AMERICAN ASSOCIATION FOR THE STUDY OF GOITER

The American Association for the Study of Goiter will hold its meeting at Kansas City April 7, 8 and 9, 1931. The following Minnesota physicians appear on the program: Dr. H. S. Plummer, Rochester; Dr. J. F. McClendon, Minneapolis; Dr. Martin Nordland, Minneapolis; Dr. John Pemberton, Rochester; Dr. James Hayes, Minneapolis. The meeting will consist of clinics, symposia and addresses.

(Continued from page 270)

the investigations mentioned are made and the program of treatment followed. However, a small number of cases of prostatitis are incurable. In some of these cases there is no history of gonorrheal urethritis. In these cases the prostate is enlarged, boggy and riddled with small abscesses. Treatment is ineffective and often aggravates the symptoms, in which event it should be discontinued.

2. *Question*.—A young lady, age 25, consulted me in regard to what appears to be alopecia areata. The condition has existed for about six months, the symptoms being loss of hair in region of eyebrows and upper eyelids. There are some fine hairs and some short black stubby ones. Some hairs removed show a little enlarged condition. History and physical examination otherwise is negative. I have used the quartz light and prescribed ointment containing salicylic acid, sulphur and tar.

*Answer*.—The diagnosis is probably alopecia areata. No known etiology has been demonstrated. All dermatologists advise rubefacients. Glandular therapy is without avail. Ultra-violet radiation at times does good. The prognosis is usually good, and psychotherapy should be directed along these lines.

## WOMEN'S AUXILIARY *Minnesota State Medical Association*

President—Mrs. S. S. Hesselgrave, St. Paul  
Chairman Press and Publicity—Mrs. E. A. Meyerding, St. Paul  
Editor—Mrs. A. A. Passer, Olivia

### PANORAMIC VIEW OF THE WOMAN'S AUXILIARY TO THE A. M. A. IN FOUR ARTICLES

#### 1. THE EASTERN DISTRICT MRS. W. WAYNE BABCOCK

According to the Constitution of the National Auxiliary the First Vice-president is automatically chairman of organization, the three other Vice-presidents being organizers for their section of the country. Mrs. Southgate Leigh of Virginia, therefore, holds this chairmanship, and the Eastern District is her particular responsibility. At her request a series of four articles is being prepared by her committee in order that each district may be cognizant of the progress of its own state as well as those of the other three sections. The individual state journals have been generous in extreme in the space they have allowed their auxiliaries and this additional courtesy of reporting the auxiliary situation in other states is deeply appreciated, for there is a growing desire to know "what others are doing."

New Hampshire stands alone as the only New England state 100 per cent organized and coöperating with the National Organization. Last year the state auxiliary had misgivings as to its necessity and usefulness, but an urgent request from the medical society that the women remain organized, dispelled all doubts. During the year following, Mrs. Hubbard, wife of the State President, visited every county, which encouraged and stimulated the growth of unit auxiliaries.

The New Jersey Auxiliary made pilgrimages to state institutions, set apart one meeting when the mothers of physicians were entertained, and sponsored various health meetings. The Essex County Auxiliary, assisted by the physicians, succeeded in establishing a course of health talks, in coöperation with the Y. W. C. A. of Newark, emphasizing especially prenatal care and information which would aid the mothers of babies and young children. Last year Mrs. James Hunter, Jr., New Jersey's State President, visited every county, as did Mrs. Walter Jackson Freeman in Pennsylvania, during her Presidency. One cannot help drawing the conclusion that personal contacts are necessary for county development and success.

Virginia is active in spots. The doctors encourage the auxiliaries as they believe that through them education with regard to the menace of state medicine can be spread.

Ohio for several years has been sending representatives from a few organized counties to the National meetings, but as yet there is no state organization. As our friend and advisor, Dr. Upham, lives in Ohio, it is felt that he will advise the National Auxiliary when the auspicious time arrives for the establishment of a State Auxiliary.

The District of Columbia seems so completely diverted with Washington affairs that the auxiliary which so capably cared for the A. M. A. meeting some years back seems to have gone into retirement.

Delaware in a breathless, better-late-than-never manner, has completely caught up and is most interested and active and has entered upon serious work by assisting the men of the profession in establishing a medical library in Wilmington. They will coöperate with Philadelphia at the time of A. M. A. and the eastern section will introduce them with pride to the National Organization. West Virginia is up and doing and you may expect still better things from that State this year.

Maine, Massachusetts, Rhode Island, Vermont and Maryland have reported the interest of individuals but no organized effort. Queries from different localities in New York as to why there is no auxiliary have been answered with the statement that several years ago the House of Delegates voted unanimously in favor of the auxiliary and authorized its organization. The same year Connecticut voted favorably but no definite steps have been taken.

Pennsylvania has surely discovered the rhythm in which its auxiliary work is best done, for concrete accomplishments have been turned out regularly, year by year. Of the three thousand dollars contributed last year to the Medical Benevolence Fund more than two-thirds was contributed by the Auxiliary. A definite trend toward educational meetings is felt all over the state and socially it is hoped that the carefully formed Philadelphia plans for the next meeting will bring honor and glory to the Keystone State. Not only are the adult members of the auxiliary meeting, but a group of the most charming and good-looking daughters of doctors are working together in order that they may know each other and work in unison for the comfort and pleasure of the A. M. A. guests when they come to Philadelphia in May. Verily, who can question the wisdom of the auxiliary, when it brings about so much willing work in behalf of the medical men of the country?

The midwinter meeting of the Executive Board of the Women's Auxiliary was held in the Colonial Room of the Lowry Hotel, Friday, February sixth. Luncheon was served at 12 o'clock, and the meeting was called to order by the president, Mrs. S. S. Hesselgrave. There were twenty-eight members present. Dr. L. Sogge, president of the State Medical Association, was the speaker for the occasion. He stressed the importance of past medical legislation and of present pending bills which are of interest to the medical profession, and advised that the Auxiliary members keep posted on current legislation. During the business session reports were given by the state officers, county presidents, and chairmen of committees.

Mrs. J. M. Murdoch was appointed chairman of Hygeia. Arrangements for the entertainment of the guests were made by Mrs. H. T. Nippert and Mrs. P. Roy of St. Paul.



### HENNEPIN COUNTY AUXILIARY

The Women's Auxiliary of Hennepin County recently gave \$50 to Glen Lake Sanatorium for their library and also purchased a five dollar Christmas Seal Bond. The annual meeting was held January 28, at the Business Women's Club, Minneapolis. Among the revisions of the Constitution, which were adopted at this meeting, were a raise in dues from one to two dollars a year, and the changing of the date of the annual meeting from January to March, and also includes three new officers, namely, a president-elect, a parliamentarian, and a custodian.

Officers elected for 1931 are: President, Mrs. Martin Nordland, Robbinsdale; president-elect, Mrs. Hugh Tunstead; first vice president, Mrs. J. S. Reynolds; second vice president, Mrs. S. H. Baxter; recording secretary, Mrs. Fred Pratt; corresponding secretary, Mrs. Daniel Bessessen; treasurer, Mrs. G. G. Eitel; auditor, Mrs. E. T. Evans; parliamentarian, Mrs. W. J. Brynes. An Advisory Board for the Auxiliary was appointed by Dr. S. H. Baxter, president of the Hennepin County Medical Society, consisting of Dr. Rood Taylor, Dr. Theodore Sweetser, and Dr. Cecile Moriarity.

### PARK REGION AUXILIARY

A business meeting was held in January, at the home of Mrs. W. L. Burnap, of Fergus Falls, followed by a social hour. It was voted to send \$15 to the Otter Tail Sanatorium to be used as a revolving fund for their industrial work. Mrs. E. R. Saethre, of Alexandria; Mrs. F. H. Vail, of Henning, and Mrs. A. D. Baker, of Fergus Falls, were appointed to investigate future projects for the Auxiliary. Mrs. Theo. Satersmoen, of Pelican Rapids, was appointed a legislative member. Mrs. C. O. Estrem, of Fergus Falls, was elected president for 1931.

### RAMSEY COUNTY AUXILIARY

Mrs. H. O. Skinner, 2190 Princeton avenue, St. Paul, was hostess to the Women's Auxiliary to the Ramsey County Medical Society, at her home, Monday afternoon, January 26. In reviewing activities of the organization it was reported that more than \$200 had been spent on philanthropic endeavors, the organizations benefited including the Jean Martin Brown Home; Shoe and Clothing Committee of the St. Paul Council of Parent-Teacher Association; Volunteers of America; Goodwill Industries; United Charities for Children at Christmas. The Auxiliary also provided fifteen dinners and sent jellies and jams to institutions as well as assisted with sewing and mending for the Gillette Hospital for Crippled Children at Phalen Park and the Children's Preventorium at Lake Owosso.

### WRIGHT COUNTY AUXILIARY

Officers for the Wright County Auxiliary are: President, Mrs. J. J. Catlin, Buffalo, secretary-treasurer, Mrs. George Norris, Annandale. The regular meeting was held at Monticello, the twenty-ninth of January.

### RICE COUNTY AUXILIARY

The Rice County Auxiliary was entertained in December at the home of the president, Mrs. A. M. Hanson, of Faribault. After the business session the members devoted their talents to the task of dressing twenty dolls and making art books. These dolls and books were presented to the St. Lucas hospital in Faribault and the City Hospital in Northfield. Plans were made to keep the children in the hospitals supplied with dolls and books.

In January four Auxiliary members were guests of the Ramsey County Auxiliary, at a regular meeting, in St. Paul. The February meeting was held at the home of Mrs. J. M. Murdoch.

## PROCEEDINGS MINNESOTA ACADEMY OF MEDICINE

Meeting of January 14, 1931

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club, Wednesday evening, January fourteenth, 1931. Dinner was served at 7 o'clock, and the meeting was called to order by the president, Dr. J. S. Gilfillan, at 8 o'clock. There were forty-one members and one visitor present.

Minutes of the December meeting were read and approved.

The president appointed a committee, consisting of Dr. J. F. Fulton (chairman), and Drs. Geist and F. R. Wright, to draw up resolutions on the death of Dr. F. A. Dunsmoor.

Upon ballot the following men were elected as candidates to the Academy: Saint Paul, Dr. Max H. Hoffman, Dr. John F. Noble, Dr. Clayton K. Williams; Minneapolis, Dr. Moses Barron, Dr. Kenneth Bulkley; University, Dr. Irvine McQuarrie, Dr. O. H. Wangenstein.

DR. EMIL S. GEIST (Minneapolis), retiring president, then read his Presidential Address, entitled, "The Intervertebral Disc." This was illustrated by numerous lantern slides. There was no discussion of the paper.

The meeting adjourned.

R. T. LA VAKE, M.D.,  
Secretary.

### KOTEX

Because of inquiries received in regard to the nature of the deodorant present in the widely advertised sanitary napkin, Kotex, the A. M. A. Chemical Laboratory examined the product. A specimen was labeled "Genuine Kotex Deodorized." An enclosed circular contained the statement: "Kotex is odor-proof. A mild, pure, safe antiseptic removes any danger of offense during the use of Kotex." The Laboratory found the Kotex pads to contain an amount of boric acid which is too small to be considered of value as a deodorant. (Jour. A. M. A., January 17, 1931, p. 193.)

## PROCEEDINGS OF THE MINNEAPOLIS SURGICAL SOCIETY

Meeting of January 6, 1931

The regular monthly scientific meeting of the Minneapolis Surgical Society was held in the lounge of the Hennepin County Medical Society in the Medical Arts Building on Tuesday evening, January 6, 1931, at 8 o'clock.

The meeting was called to order by the President, Dr. A. T. Mann. There were twenty-five members and nine visitors present.

The President announced the Annual Meeting and Banquet which would be held on the evening of February 5th at the Nicollet Hotel.

The scientific program was as follows:

DR. IVAR SIVERTSEN reported a cast of "Exophthalmic Goiter Complicated by Pregnancy."

A case of exophthalmic goiter complicated by the presence of a pregnancy is always interesting, especially in view of the divergence of opinion held by the profession. Gillharn stated that "a woman with exophthalmic goiter should not marry; if she marries, she should not become pregnant; if she becomes pregnant, she should be aborted." Strause, Falls, Mayo Clinic and Lahey Clinic have claimed there was no evidence that pregnancy influenced the course of exophthalmic goiter. Since the use of Lugol's solution became popular in 1923, preliminary ligation ceased to be used to any extent and the Mayo Clinic and Lahey Clinic find that patients with exophthalmic goiter, although pregnant, may be treated medically and surgically with no more risk than in the non-pregnant case. Many obstetricians prefer conservative treatment during pregnancy to be followed by surgery after delivery. In either case the effect on the newborn is the same—nil.

In support of the view that a patient with exophthalmic goiter becoming pregnant may be operated upon without injury to mother or child, the following case was presented:

No. 30762, Mrs. A. G. N., housewife, aged 39, born and raised in this vicinity, the mother of three children (the youngest of which was five), noted an enlargement of her neck about a year prior to her first visit to the clinic. She had noted in the last five months increasing nervousness, weakness, profuse perspiration with tachycardia and palpitation, loss of weight in spite of good food intake. There were no gastrointestinal symptoms. She had not menstruated for two months.

Her family history disclosed the fact that her father, mother, a brother and two sisters were living and all were well except her father, who had a cancer of the lip. She had always been in good health prior to the last year.

Examination on June 7, 1929, disclosed evident loss of weight, thyrotoxic appearance, an enlarged thyroid moderately soft with bruit present. The blood pressure was 160 systolic, 70 diastolic; temperature 98.6°; pulse 134; heart normal except for rapidity, lungs

clear, abdomen normal, teeth and bones normal. The uterus was enlarged, cervix softened, adnexa normal. Hemoglobin was 80 to 85 per cent, R.B.C. 4,800,000, W. B. C. 8,400. The urine contained one plus sugar, a trace of albumin with a few white cells, epithelial cells and bacilli. Meinecke was negative.

Diagnoses were: (1) exophthalmic goiter; (2) pregnancy.

Hospitalization was recommended. The patient entered Fairview Hospital June 10, 1929. The basal metabolism was plus 74 per cent; and checked four days later was plus 76 per cent. She was placed on light diet, Lugol's solution min. 10, p. c., ice locally, and bromides. History was then elicited that the patient, while ambulant, took Lugol's solution seven weeks prior to admission to the hospital. The tremor subsided and the general condition improved so that Lugol's was discontinued after eleven days in the hospital. Four days later the right superior thyroid artery was ligated under novocaine, without distress. Four days later the left superior thyroid artery was ligated under gas anesthesia, without distress. Six days later Dr. S. R. Maxeiner was called in consultation, and reported as follows: "The patient was seen in consultation with Dr. Ivar Sivertsen at 5:45 p. m., July 5, 1929, at Fairview Hospital. The history and physical examination, as recorded by Dr. Sivertsen, and the hospital records were reviewed. The patient's general checkup of hyperthyroidism was made. The patient is running a pulse of 135 and the blood pressure is 135/60, with marked tremor, exophthalmos, and palpable thyroid. Pelvic examination was not made but Dr. Sivertsen states that the patient is more than four months pregnant. I agree absolutely that this is a case of exophthalmic goiter, and that surgery will be the natural treatment in her case. In spite of the fact that the patient is pregnant, the pregnancy is so early that we have no assurance that the patient will not abort and the pregnancy be naturally discontinued because of her thyrotoxic condition. As a result, I believe that the patient herself is the most to be considered in this particular instance and that surgery should be employed as soon as indicated. I would suggest that the patient be given large doses of Lugol's for a few days in an effort to slow the pulse and possibly put her in better condition for operation. If she does not respond to treatment, it may be necessary to resort to surgery in view of the fact that she is losing weight rapidly. (Signed) Dr. S. R. Maxeiner."

Eight days later, during which time weight loss and tachycardia had continued, a thyroidectomy was performed under novocaine and ethylene anesthesia. Her postoperative convalescence was uneventful. She sat up on the tenth day and left the hospital on the sixteenth day postoperative.

The laboratory diagnosis was toxic adenoma.

One month postoperative, the patient had increased in weight and strength and felt well; the pulse was 80, and the pregnancy undisturbed. Three months postoperative, the weight continued to increase, the blood pressure was 140/80, and the pregnancy o.k. Nine months postoperative, the patient reports that a normal

baby was born five and one-half months postoperative. The delivery was normal, and conditions normal. Nineteen months postoperative, the patient's weight was 144 pounds (formerly 114 pounds), and she was well and healthy.

## DISCUSSION

DR. E. K. GREEN said that Dr. Sivertsen's case, with his modern up-to-date treatment, reminded him of a case which he had seen with the late Dr. L. A. Nippert about twenty-nine years ago. The patient was a woman about 40 years of age, with all the physical signs and symptoms of a marked Graves' disease, who had come to full term with nothing but symptomatic treatment. The exophthalmos was extreme; she had a large thyroid, very fast pulse, and was very nervous. The family was desperately poor and while Dr. Green gave the chloroform (in a small 10 x 12 bedroom) Dr. Nippert had delivered a perfectly normal baby that was still-born because of a protracted difficult labor. Somewhat to their surprise, the patient made an uncomplicated recovery from the labor.

Dr. Green added that the patient has never had surgical interference and when he saw her about two years ago, while she was in rather poor health, she was able to get about and do her housework.

DR. A. A. ZIEROLD asked how a diagnosis of toxic adenoma could be made in the laboratory.

DR. MARTIN NORDLAND was of the opinion that it is characteristic that pregnancy has a tendency to aggravate the usual toxic symptoms of the thyroid, and if this were toxic adenoma it would perhaps account for the high basal reading of 74. The incidence of toxic goiter in pregnancy, according to Mayo, is 0.6 per cent. Pregnancy usually lights up the symptoms of toxic goiter, and he recalled a case where these symptoms subsided and the patient got along relatively well after the pregnancy ceased.

DR. J. M. HAYES asked if the basal metabolic rate had been checked up after delivery and, if so, what it was.

DR. SIVERTSEN stated that he did not take it afterwards. As far as the laboratory diagnosis of toxic adenoma was concerned, which Dr. Zierold questioned, Dr. Sivertsen had not accepted that. His own diagnosis in the case was toxic goiter. As to pregnancy in goiter cases, it is known that pregnancy increases the metabolic rate and pregnancy increases the toxicity of the gland. Lahey's figures show only 0.4 per cent, while Mayo shows 0.6 per cent of hyperthyroidism in pregnancy.

DR. A. T. MANN said, in relation to Dr. Zierold's comment, that if the laboratory men looked at the mass that was taken out and found an encapsulated mass they would feel that it was an adenoma.

DR. ZIEROLD said some one asked if this was a toxic adenoma or exophthalmic goiter. He felt there was no question about the accuracy of laboratory diagnosis of adenoma of the thyroid or of Graves' disease, but he did not know of any one yet who is able to make a diagnosis of toxic adenoma under the microscope.

DR. R. C. WEBB read a short paper and reported a case of "Hyperthyroidism Complicating Diabetes Mellitus" (to appear in MINNESOTA MEDICINE at a later date).

## DISCUSSION

DR. R. F. MCGANDY stated that he had heard two very interesting case reports this evening, but that he was just now interested in another phase of the subject and would appreciate an expression of opinion from Dr. Webb or Dr. Sivertsen (or any of the members) concerning, in particular, the causative factors in hyperthyroidism and whether or not one could justifiably say that nervousness or some emotional strain could cause hyperthyroidism. He was not referring to a preëxisting hyperthyroid which was aggravated by these factors, or to a preëxisting nervous system which the excitability may have precipitated. But he would like to have an expression as to whether one could say that some nervous shock, such as might follow an accident, could cause hyperthyroidism.

DR. WEBB suggested that several of the members present had had experience with hyperthyroid cases and if any of them had been associated with trauma he would like to hear of their cases.

DR. MANN stated that it is well established in the literature, and all the men had been getting it in lectures for years, that shock is one of the manifestations of hyperthyroidism.

DR. MCGANDY said this really was quite a question. He had recently seen three cases in which this had been a disputed point. While it was true that this had been taught as a cause of hyperthyroidism, Dr. McGandy felt that authors in recent years had been evading this phase, and only today he had read an article by a man who also seemed to evade the issue but placed nervous shock in the group of hereditary factors. Dr. McGandy would grant that an accident might precipitate the condition in one who had an inherently unstable nervous system; but could it do so in a person who is normal?

DR. W. P. HERBST related some work which, however, was not conclusive because it was not completed. A man by the name of Duranti had made serial sections in the cervical sympathetics in exophthalmic goiter and reconstructed them in models. He was working on the theory that the amount of chromatin granules in the cervical sympathetics had something to do with exophthalmic goiter. On that basis one could figure out that shock might play a part in the production of exophthalmic goiter by the result of psychic shock on the sympathetic system.

DR. MANN said that it is very definitely known that the chromaffin system, of which the cervical sympathetics are a part, has a very considerable influence on the activity of the thyroid gland. Dr. Mann was of the opinion that they were "begging the whole question." Of course if the person had no hyperactivity of the goiter before the shock and had it after the shock, then the shock would be the immediate cause of the upset in the whole complicated system which might have been started in some other way under other conditions.

DR. HAYES said, in reference to Dr. McGandy's discussion of these cases in court, that it was usually pathetic and humiliating to the honest physician to go into court and tell what he knew about the cause of hyperthyroidism before a jury and an attorney who was attempting to discredit his testimony. No physician can honestly make a definite statement as to the factor injury or accident plays in these cases.

DR. NORDLAND felt that the members were confusing the terms "cause" and "influence," as no one knows the cause of exophthalmic goiter. An accident might influence and cause an exacerbation of the symptoms of a toxic goiter in a patient who already has this disorder. He felt that the subject was getting highly theoretical when one considers the cause of thyroid disturbance. Boothby claims that in the average human being there is constantly about 10 mg. of thyroxin present and from 2 to 4 mg. of this is used up each day. Of course there is some mechanism present in the body by which this thyroxin is renewed. It has been considered that the center which controls the production of thyroxin may be somewhere in the brain. If this is true, it is theoretically possible for an accident to aggravate this central control of thyroxin production. Dr. Nordland felt that one could not talk with any degree of certainty about the "cause" of exophthalmic goiter.

DR. MANN believed that this (the cause of exophthalmic goiter) comes from more than one direction; something which influences the pancreas, or the adrenals and the chromaffin system, or something which influences the gland itself can do it. Of course, the whole thing is under sympathetic nervous control more than anything else but this can be strongly influenced by cerebral impulses of certain types.

DR. WEBB stated he did not believe that hyperthyroidism could be attributed solely to an accident. The cause of this disease is not known but the present assumption is that a preëxisting state was present and that, given such a disease an influenza or other factors, the disease occurred as an exacerbation.

DR. ARTHUR L. HERMAN read his Thesis entitled "Double Branchial Cysts Complicated with Carcinoma of the Larynx" (to appear in MINNESOTA MEDICINE at a later date).

#### DISCUSSION

DR. JAMES JOHNSON felt that this thesis was a very interesting one. It was particularly interesting to him since in 1926 he had read a paper on this subject before the State Medical Society in which he had reported five cases. None of them, however, were malignant. He stated the second and third branchial clefts were the ones in which there was most often embryologic defects and remnants. The second cleft, which empties into the tonsillar fosse, and the third cleft, which enters into the pyriform fossa, were the two involved in Dr. Herman's case. Most often the cyst developed from the outer side of the cleft. However, in this particular instance it apparently developed from

the ectoderm and pushed in through to the inside of the larynx. This is an exceedingly rare thing and especially to have such a remnant in this location malignant is indeed a rare situation. Dr. Johnson felt that Dr. Herman should be complimented on the care with which he prepared this case.

DR. HAYES asked if Dr. Herman stated or had any definite figures as to the percentage of branchiogenic cysts that had become malignant.

DR. MANN said that of course the inner attachments of these branchial cysts or sinuses are always high in the neck because the mandible or lower jaw itself is in the first arch and the ear drum closes the first cleft, so it makes us jump to the second at least. The styloid process, the digastric muscle, and the little horn of the hyoid bone to which it runs are in the second arch, and the hyoid body and the greater wings of the hyoid are in the third arch, and the fourth (there is no fifth in the human) gives rise to all the structures of the neck below this. Sometimes one may find the cysts running deep but over the digastric muscle and styloid process when it arises from the second cleft, and running under the belly of the digastric muscle but over the great wing of the hyoid bone when it arises from the third cleft; and it is known that most of them arise from the second and third clefts. And, of course, with these solid growths there will be the question of dermoid inclusions, so when the tumors are of mixed cells they are spoken of as dermoids. Dr. Mann thought it was very rare to have two branchial cysts in the same person.

DR. NORDLAND said that he did not understand the explanation Dr. Herman made for the loss of voice in this case. He believed that the pathology described was too high to affect the recurrent laryngeal nerve.

DR. HERMAN stated that there were two cysts, one fairly high, but which might cause some pressure on the vagus at least. The other cyst was low enough to cause pressure on the inferior laryngeal nerve.

DR. NORDLAND stated that he did not believe that pressure on the vagus alone would affect the voice.

DR. HERMAN said that in this particular case the aphonia was much more apt to be due to pressure from the cyst within the larynx.

In answer to Dr. Johnson's question, Dr. Herman said that while he had no way of absolutely establishing the location of the cyst, he could only state in agreement with Dr. Phelps and Dr. Spratt, who had seen the patient, that the cyst was in the pyriform recess. The lower external cyst was also at this same level.

In answer to Dr. Hayes' question as to the percentage of branchial cysts which become malignant, Dr. Herman stated that this information was very difficult to obtain from the literature because of the fact that many authors undoubtedly included malignancies which did not have their origin in branchial cysts. Thus some authors included cases which were mixed tumors of the parotid. Others included cases where the possibility of an overlooked primary lesion in the nasal sinuses or larynx had not been properly ruled out.

In this connection he mentioned a case that was thought to be a malignancy of a branchial cyst, whereas at autopsy the primary lesion was found to be a minute



carcinoma in the larynx. In other cases the primary lesions were found in the nasal sinuses. If autopsies had not been performed on these cases, they would have gone into the literature as branchiogenic malignancies. So, both because of failure of all cases to be autopsied, and because of lack of agreement as to just what constitutes a branchiogenic tumor, the figures in the literature are too high.

DR. MANN asked Dr. Herman when the diagnosis of carcinoma was first made; whether it was on the first biopsy.

DR. HERMAN said it was not made until the second biopsy.

DR. MANN asked as to the type of carcinoma.

DR. HERMAN stated that it was squamous cell.

DR. MARTIN NORDLAND read a paper, illustrated with lantern slides, entitled "Increased Susceptibility of the Hyperthyroid Patient to Air Embolism, with experimental evidence."

#### DISCUSSION

DR. ZIEROLD felt that every one present would agree that this was a most excellent piece of work that Dr. Nordland had done and that he should be extended the appreciation and thanks of the members for bringing it before the Society tonight. He felt that it was an unusual observation, and that it was interesting to note how Dr. Nordland's observations conform to what are apparently unrelated observations on thyroid patients. He thought probably an extension of the series might do away with the false impression created by the record of the last animal in the experiments, as the curves all seemed regular up to that point.

Dr. Zierold called attention to the fact that the pulse pressure in the animals increased with the increase of dosage of thyroprotein; that, of course, conforming to clinical observations in hyperthyroidism. He also mentioned an interesting observation of the end-results in hyperthyroidism noted by Dr. E. T. Bell. Recently he had examined at autopsy an untreated case of exophthalmic goiter, the only unusual finding being a generalized hypertrophy of the heart—apparently the same picture found in the other extreme, which is myxedema. Dr. Zierold stated that the premise on which Dr. Nordland's work is based is very clear. It would seem from the recent studies that there is a weakened heart muscle in the later stages of hyperthyroidism. If that is the case, Dr. Zierold felt that any mechanical disturbance, such as air embolism, interfering with the function of such a heart would cause the death of the animal sooner; and this is in accord with Dr. Nordland's findings.

There was one suggestion which Dr. Zierold said he might offer which might add to the accuracy of the observations, and that is to obtain the weight of the heart; checking the amount of air in proportion to the weight of the heart, as being a truer measure rather than the weight of the dogs.

DR. E. A. REGNIER asked Dr. Nordland whether or not he had noticed any embolic changes in the coronary

vessels of the heart, and mentioned recent work by Rukstinat (Jour. A. M. A., Vol. 96, No. 1, Jan. 3, 1931), whereby he had injected air into the coronary arteries of dogs, with postmortem findings similar to those found by Dr. Nordland. Dr. Nordland mentioned that death seemed to be due to a mechanical obstruction of blood flow to the right heart; and Dr. Regnier felt there was a possibility that embolism of the coronary vessels may have been brought about by his procedures.

DR. JOHNSON asked how rapidly this air was injected; whether it was injected slowly, or a given amount of air was injected in a given length of time.

DR. LEO MURPHY asked how often in their experience the members had seen air emboli. He had read about it (particularly in the foreign literature) and had heard about it, but he had never seen it, and was interested to know how many of those present had had any experience with air embolism.

DR. MANN stated that he had never seen one. There had been a good many operations at the Boston Hospital when he was house surgeon but he had never seen one there nor in private practice. In connection with Dr. Murphy's remark about seeing more of them reported in the foreign literature, Dr. Mann stated that might be due, partially at least, to their method of operating; and then they have much larger goiters as a rule.

DR. W. A. HANSON said that in reviewing the literature of thyroidectomies, air embolism has occurred few times in this country. Probably cases have occurred which were not recognized as such. Dr. J. Pemberton, in a review of the cases at the Mayo Clinic to 1924, states there was probably one case of air embolism which was recognized at the time of operation in 14,911 resections, and with only three deaths recognized to be due to pulmonary embolism.

DR. E. T. EVANS said that when speaking of "air embolism," one must remember that a good deal of air can be put into the jugular without causing death.

DR. WEBB wondered if among the large number of cases mentioned there were any that died during or shortly after operation and, if so, were they autopsied? He himself had had one case in which he would never have known the cause of death had he not succeeded in getting an autopsy. Dr. Webb was of the impression that there must be a definite condition present in or about the vein which has been cut to permit the air to enter and that this was a very important factor. He recalled a man he had picked up while riding the ambulance in New York. This man, while inebriated, had cut his throat and was lying in a pool of blood trying to sing, with a partially severed trachea.

Dr. Webb thought it would be interesting to know just how toxic Dr. Nordland's dogs had become. He also thought that to render the condition comparable to a patient undergoing operation, the dogs should be fed Lugol's solution and brought back to normal. It would rather seem that a heart which was being whipped on by a toxic goiter was better able to take care of itself under such circumstances than a normal heart. This is especially brought to our attention when

one considers the large number of goiter operations performed with an inexperienced assistant catching the bleeding vessels.

DR. KENNETH BULKLEY said he was impressed by what Dr. Murphy said in regard to looking over the literature and the more frequent occurrence of emboli in foreign countries than in this country. Dr. Bulkley said he was in France two and a half years and watched particularly Morestin, who was the best known neck and facial man France had ever produced. Theoretically, Morestin should never have had an air embolism. He operated in a well of blood about two inches deep, had one non-sterile nun and usually only one 12- or 14-year-old boy helping him. He would do a block neck dissection in fifteen or twenty minutes. Dr. Bulkley had seen him do an excision of the tongue and neck dissection in a half-hour.

As to what Dr. Webb said about cut-throats and why they do not get air embolism, Dr. Bulkley stated that he had never seen a case and yet while he was house surgeon at Presbyterian Hospital in New York he was called when two of their old orderlies in a state of depression had cut their throats and neither had air embolism. He had seen two others but neither of them had had air embolism, although there were two immediate deaths in the group, one from immediate hemorrhage and the other later from sepsis.

DR. NORDLAND (in closing) stated he wanted to thank the gentlemen for their remarks in the discussions. He appreciated Dr. Zierold's suggestion that the weight of the heart ought to be considered with reference to the effect of the quantity of air that might be injected.

Dr. Nordland believed that the reason why accidental injuries to the veins of the neck, such as cut throats, did not produce air emboli, was due to the fact that these veins were probably cut above the point where they passed through the fascia obliquely. It also might be explained by the facts demonstrated in this study, that it takes larger quantities of air to cause death in the non-toxic individual.

In answer to Dr. Johnson's question with reference to the rapidity of the injection of air, Dr. Nordland said the air was injected at a speed of about 100 c.c. within 2 seconds. The same speed was used for the normal and the toxic animals.

Dr. Murphy's suggestion that reports of death from air embolism were more common in Europe than in this country, might be explained by the fact that, in the past, postmortems were more frequent there than in this country.

Dr. Nordland wished to emphasize again that the object of this experimental work was to find out whether or not the toxic goiter patient was more susceptible to air embolism than the non-toxic patient, and he felt that from the results of this work one could say that the toxic patient was more susceptible.

An Eastman moving picture film of "Simple Goiter" was shown, after which the meeting adjourned.

H. O. MCPHEETERS, M. D.,  
Secretary.

## PROCEEDINGS OF THE MINNEAPOLIS CLINICAL CLUB

Meeting of December 16, 1930

The Minneapolis Clinical Club had been invited by the St. Cloud Physicians to give their monthly scientific program at the monthly Staff Meeting of the St. Cloud Hospital, which was to be held at the Hospital in St. Cloud on the evening of December 16, 1930.

A bus was chartered and twenty members of the Clinical Club made the trip, arriving at the Hospital for a 6:30 dinner as guests of the Staff. After dinner the doctors adjourned to the Staff Room, where the meeting was called to order by their President, Dr. J. P. McDowell. After a cordial welcome, Dr. McDowell asked the staff members to rise as he called their names, introducing them to the members of the Clinical Club. He then called on Dr. Barron to conduct the meeting, first introducing the members of the Club.

DR. MOSES BARRON: It is a pleasure to be here again. I was here once before and enjoyed it so much that I wanted to come again, and we thank you for your kind invitation to come down here and give this program.

The Minneapolis Clinical Club was organized ten years ago for the purpose of giving the younger men an opportunity to get together and meet in a social way to discuss rather informally various subjects in the different specialties. It is composed of the younger men; in fact, our Constitution states that only the younger men may belong. We have 33 members and meet once a month, and this meeting tonight is typical of one of our regular monthly meetings so that you may see just what they are like.

The scientific program consisted of the following papers:

DR. J. M. HAYES read a paper on "The Treatment of Acute Empyema of the Gallbladder." (Paper not yet published.)

### DISCUSSION

DR. S. R. MAXEINER: I am very much interested in the report of Dr. Hayes' cases, and would have liked very much to have had an opportunity to look up my own records before discussing this paper.

I believe there are perfectly legitimate grounds in this field for differences of opinion and that a lot of these differences of opinion will be based on personal experience, often to the extent of "burnt fingers." During six years of service as surgeon at the Minneapolis General Hospital and approximately eight years of service as consultant for the Government, and in my private practice, I have had occasion to see a good many acute gallbladders and have personally come to the conclusion that, when it is possible to do so, the acute attack should be allowed to subside and the patient instructed to return for subsequent operation when the infection has entirely disappeared. In some instances, however, because the patients did not do well,

we have been compelled to treat them surgically, and practically always by drainage rather than by removal of the gallbladder. Following an experience several years ago in which three cases of acute empyema with gangrenous gallbladders died following cholecystectomy, I swung completely to drainage of the gallbladder and since that time have not lost one single acute gallbladder that I have been compelled to operate upon. In the last two or three years, I have operated upon three perforated gallbladders, all of which formed localized abscesses. In these, the abscesses were drained and the stones removed without getting inside the general peritoneal cavity.

Recently, in a conversation with Meyer of Chicago, I find that his experience checks almost directly with my own and in comparing his cases with some of his colleagues who were operating upon acute gallbladders he was convinced that he was following the right plan. Ravdin, of the University of Pennsylvania, at the last meeting of the American College of Surgeons, reviewed their statistics and stated that their mortality was much higher with cholecystectomy than with cholecystostomy in acute gallbladders and that, even though 30 per cent of the drainage cases must return for cholecystectomy, the mortality from the double operation was lower than for removal of the gallbladder during the acute attack. I do not believe that it is possible to differentiate the gallbladder containing pus (empyema) from the severely acute gallbladder that may not be classed as purulent.

Dr. Hayes' findings and his subsequent cases are deserving of close observation and certainly we are all looking for an opportunity to improve our present methods. As for my own experience, I am basing my conservatism on my own lower mortality in conservative treatment of the acute gallbladder.

DR. O. J. CAMPBELL: I had my fingers burned in the other direction. I was called to see the father of a medical student because of two recent attacks of acute gallbladder disease. He was just recovering from an attack, so we deferred operation. Local tenderness had disappeared and we were on the point of operating, when I was called out of town for two weeks. I advised the student to have another surgeon operate. Returning, I found the patient had waited but was in the midst of another attack. Again we waited for the acuteness to subside but, because of the frequent attacks, feared to defer operation until he had fully recovered.

At operation we found a badly diseased, almost gangrenous gallbladder containing large stones. The common duct was not distended but the pancreas was enlarged and indurated. There was no fat necrosis. I removed the gallbladder feeling that it was too badly diseased to use for drainage. The patient, after an initial rally, died of acute pancreatitis and peritonitis on the tenth day. Extensive fat necrosis was revealed post mortem.

This illustrates to me the fact that in acute cholecystitis we are confronted with a situation where fine surgical judgment is required. We cannot sit tight on all cases, neither should we dogmatically operate

all. In the case just cited, had the man been operated when first seen he might have escaped pancreatitis and death.

From the information at hand it is difficult to be sure of what constitutes a conservative attitude. For my own part, conservatism seems to dictate a policy of waiting when the onset is not too stormy nor the attacks too rapidly following each other. When the attack is extremely violent with evidence of rather widespread peritoneal involvement it seems wise to operate. Whether or not the gallbladder is to be removed depends upon the exposed pathology, the age and general resistance of the patient. Where there is no actual abscess surrounding the gallbladder it can apparently be safely removed. In very elderly people, debilitated individuals, and those in whom collections of pus have already gathered outside the gallbladder, conservatism seems to indicate drainage rather than excision.

There is a point in technic which is possibly worth recalling. In dealing with the friable cystic duct, not infrequently the cystic artery becomes loose. Trying to clamp blindly in a well of blood is very dangerous. A finger slipped through the foramen of Winslow will allow the hepatic artery to be compressed between thumb and finger while the blood is sponged out and the artery secured with forceps.

DR. R. C. WEBB: I think the proper word was mentioned when Dr. Campbell said that judgment should be used in acute cholecystitis. I feel that acute inflammation of the gallbladder is a serious condition and a definite rule should not be formulated for such patients as to whether one should permit the disease to subside or as to routine surgical intervention. When a patient has acute cholecystitis the surgeon should ask himself why he should *not* operate. There may be several reasons for not operating, *i.e.*, the disease may be subsiding or there may be other existing diseases in which an operation might create a hazard equal to that of acute cholecystitis.

In October of this year a patient was referred to me suffering severely from an exophthalmic goiter. She could be diagnosed at a glance at some distance and her basal metabolism was 55. On October 6 I performed a partial thyroidectomy and her recovery was very rapid. On October 12 she developed an acute inflammation of the gallbladder and the necessity of a second major operation became apparent and was seriously discussed. I felt that, inasmuch as she had just been through several weeks of hyperthyroidism combined with an operation for goiter, I had a reason for delaying operation. On October 22, however, she had nearly recovered from the goiter operation and the acute gallbladder was not improving so a laparotomy was made. The gallbladder was found full of pus with gallstones and there was a yellow necrotic area on the fundus the size of a twenty-five cent piece where it was about to rupture. The gallbladder was aspirated through this area and a cholecystostomy was performed through a stab wound and she made an uneventful recovery. This patient's record illustrated clearly the dangers in waiting.

In operating upon the acutely inflamed gallbladder a

cholecystectomy is ideal treatment, but the conditions vary so much at operation that such a procedure may not be consistent with the life of the patient and a partial cholecystectomy or a cholecystostomy may be all that is possible.

I believe that our policy should be to use surgical judgment, to ask ourselves why we should *not* operate and, when we do operate, to perform an operation that will give us a live patient.

DR. HAYES (in closing): I did not expect all the surgeons to agree with me on this subject. I never saw a group that did agree on it. However, as has been mentioned, surgical judgment is an important factor. One can usually have some idea as to how much the infection is confined to the gallbladder from the general appearance of the tissues. If the infection has manifestly spread to neighboring tissues and pus and necrotic tissue are present outside the gallbladder, this operation would not be advisable.

In these cases where we have the stone in the pelvis of the gallbladder or close to it and a very evident pressure on the cystic artery, we are quite sure gangrene will result if the process is allowed to advance. This is the case in which I am advocating a cholecystectomy as soon as it can be done. Much of the discussion has not been on this type of case. If you will review the literature closely on this type of case you may plainly see that this condition carries with it a large mortality. If it can be operated very early while the severe infection is still confined to the gallbladder and care is taken to prevent the spreading of the infection, the results are no doubt far preferable to those obtained by waiting.

DR. E. S. PLATOU presented a paper (read by Dr. H. B. Hannah) entitled "Poliomyelitis; An Evaluation of our Present Methods of Treatment." (Published in *Journal-Lancet*, Feb. 22, 1931.)

#### ABSTRACT OF DR. PLATOU'S PAPER

Poliomyelitis undoubtedly is far more prevalent than is indicated by recognizable forms of the disease, having an age distribution of incidence corresponding somewhat to that of measles and diphtheria, and bearing a rather direct relationship to the density of population.

The serums of convalescents, adult contacts and of the majority of "normal" adults have verucidal properties, indicating that immunity to the disease is rather general, particularly in adults, resulting from recognized and more frequently from unrecognized forms of infection by the polio virus.

The possibilities of effective serum therapy point most favorably at present to the use of convalescent, adult contact, and "normal" adult blood serums. At present the convalescent serum seems to be the serum of choice in the early treatment of poliomyelitis although there is some evidence that adult contact serum may be even more valuable. Should further study demonstrate adult contact and "normal" adult serums to equal or exceed convalescent serum in effectiveness we

will immediately be provided with an immense reservoir of anti-poliomyelitis serum for therapeutic use.

If convalescent serum is not available, the blood or serum of adults (preferably contacts) probably will serve as a valuable prophylactic agent.

#### DISCUSSION

DR. BARRON: We sometimes see sporadic cases of this disease even if it is not present in epidemic form, and I think that we should have quite a general discussion of this paper.

DR. H. B. HANNAH: I would like to add a few words in regard to the early diagnosis of poliomyelitis. A child that comes down with headache, vomiting, some fever, pain in a group of muscles, stiffness of the neck, et cetera, should be looked upon as a possible case of poliomyelitis or beginning meningitis. Early spinal puncture will in many instances make the diagnosis for us. In ordinary poliomyelitis there is not so much stiffness of the neck. I saw a patient several years ago with Dr. Platou and there was a question as to whether it was meningococcic meningitis or poliomyelitis. We decided the child should have convalescent serum. The disease finally turned out as meningitis, but which we were waiting there might have developed symptoms of poliomyelitis. In other words, giving poliomyelitis serum does no harm, even if the disease is not present.

Another point is that poliomyelitis is a lower motor neuron lesion and very early the patient will show reflex disturbances, and some muscle or group of muscles in the body become paralyzed, so it behooves every man to go over the body carefully to determine whether there is any weakness anywhere in the body. And convalescent serum should be given, or adult serum used, as early as possible. If given later it is not nearly so effective as if given in the first twenty-four hours.

DR. G. E. SHERWOOD (Kimball): I would like to ask what one should do for these patients after their acute symptoms have subsided and they have improved, but there is paralysis left.

DR. E. T. EVANS: This subject is of a good deal of interest to me. I have seen 55 cases of acute poliomyelitis, and have been called in nearly every case at the University Hospital and there have been 28 cases there.

One point about the use of the serum: Flexner states that if you give horse serum to a monkey it takes about 1/10th as much virus to give it polio as the normal monkey. Autopsies of monkeys so treated show minute hemorrhages; in other words the meningeal barrier is broken down. And for this reason I feel that the use of commercial serum may prove dangerous.

In answer to Dr. Sherwood's question about what to do for these patients after the acute symptoms subside, and there is still paralysis, we have had many such cases and we are routinely keeping the patients at absolute rest in plaster-of-Paris bandages and splints, followed by muscle re-education with muscle support and braces after four or six months.

DR. E. D. ANDERSON: It seems to me that in examining a child it is very easy to make a hurried check-



up on the arms and legs and it should be done routinely. It is a very simple thing and certainly calls your attention to any impairment of the muscles. The easiest way I have found to do this is to have the child grasp my hand and have him squeeze. Then I have him pull and push against my hand. Then I test for Kernig's with each leg and then have him raise his feet from the bed and then have him push with his feet against my hands. It takes only about a minute and if there are any disturbances you are immediately put on the track of them. I always follow this rule, not only when there is an epidemic but when any child is acutely ill.

DR. J. C. MICHAEL: In Minneapolis we have had, according to our Health Department, some 42 patients with poliomyelitis during 1930. The first case of the year was reported in the month of July. Eight of those patients were over 19 years of age. These figures show that we have not had very many cases; the number if multiplied by ten would indicate a severe epidemic. I have seen two adult cases, both atypical, during the last three weeks. There is one thing about the pathology of poliomyelitis—the very first lesion in the nervous system is meningeal. The pial and arachnoid vessels are surrounded by increasing numbers of lymphocytic cells. This inflammatory reaction incidentally follows gradually the vessels into the cord or brain stem. Hence one looks usually for pain in the head and back, generalized hypersensitivity, twitching, and drowsiness some days prior to a possible paralysis. The mortality rate is higher in the adult patients.

I think Dr. Platou's paper epitomizes very comprehensively many of the important points in poliomyelitis, especially the use of convalescent serum, which has created considerable interest during the last few years.

DR. H. B. CLARK (St. Cloud): I would like to ask how to obtain and handle the convalescent serum.

DR. H. B. HANNAH: In answer to that question, the State Board of Health has this serum all ready to use, but if you can't get that right away you can take the blood from some adult or other children of the family and separate the serum and use that at once until you can get some of the convalescent serum from the State Board of Health.

In answer to the question as to what to do with the patients afterwards, there is some difference of opinion between the neurologists and the orthopedic men. We do nothing until the pain disappears out of a group of muscles, except to keep the patient absolutely at rest. In perhaps one and a half to two years the end-result can be determined. During the early stages deformity must be prevented by putting on some appliance to prevent stretching of the paralyzed group of muscles. Then it is for the orthopedist to handle the case.

DR. R. G. ALLISON gave a lantern slide talk on "Foreign Bodies in the Air Passages."

#### ABSTRACT OF DR. ALLISON'S PAPER

It has always been comparatively easy to demonstrate foreign bodies that were opaque to the x-ray. But it was only a few years ago that Manges, who is

associated with Jackson of Philadelphia, described certain definite secondary changes in the lungs that enable us to recognize with a high degree of accuracy non-metallic foreign bodies in the air passages. There are several things that a non-opaque foreign body can do.

1. It may cause an atelectasis of one or more lobes or even an entire lung with a drawing-over of the heart and mediastinum toward the affected side. In this instance the foreign body is completely occluding the bronchus and allowing air neither to enter nor leave the affected lung.

2. It may not quite completely block the bronchus to the lung or a lobe and give a typical picture of a drowned lung. In this instance, there is no displacement of the heart and mediastinum.

3. By far the most common action of non-opaque foreign bodies is that of a ball-valve action by which air is allowed to enter the affected lung, although the ball-valve action of the foreign body prevents it from leaving. In this instance, it is very necessary to obtain plates at the height of inspiration and at the height of expiration for comparison. In the plate made on inspiration the two lungs look practically alike and the heart and mediastinum are in normal or nearly normal position. In the plate made on expiration, however, the air is not allowed to leave the affected lung. For this reason, we obtain a marked emphysema of the affected lung with a marked displacement of the heart and mediastinum toward the unaffected side. This type of behavior is noted in practically all nuts, fruit pits, and other vegetable materials that may be aspirated into the air passages. These changes can best be shown by lantern slides which I will demonstrate.

DR. H. M. N. WYNNE read a paper entitled "Abnormal Bleeding from the Female Genital Tract." (Published in *Journal-Lancet*, Feb. 1, 1931.)

DR. R. T. LAVAKE, who was scheduled to read a paper on "Everyday Obstetric Problems," asked that his paper be omitted in order to give the Minneapolis men time to make a tour of the new hospital after the meeting.

DR. F. H. K. SCHAAF gave a talk on "The Treatment of Cardiac Diseases" with a plea for the more rational use of the drugs most generally in use at the present time.

DR. BARRON (closing the meeting): On behalf of the Minneapolis Clinical Club, I wish to thank the Staff and Management of the St. Cloud Hospital for the very fine dinner and music we have enjoyed this evening, and for the kind invitation which made it possible to hold this meeting together. And I move that a rising vote of thanks be given them for this hospitality. (Rising vote.)

The meeting adjourned, after which the members were escorted on a tour of the hospital.

The return trip to Minneapolis was made by bus, and the consensus of opinion seemed to be that the evening had been a most enjoyable one.

H. BRIGHT DORNBLASER, M.D.,  
Secretary.

## NEW AND NON-OFFICIAL REMEDIES

The following articles have been accepted by the Council on Pharmacy and Chemistry:

### CUTTER LABORATORY

Oak Pollen Extract-Cutter; Western Ragweed Pollen Extract-Cutter; Western Water Hemp Pollen Extract-Cutter.

### GANE & INGRAM, INC.

Ephedrine Hydrochloride.  
Ephedrine Sulphate.

### LEDERLE LABORATORIES, INC.

Diphtheria Toxoid, ten immunization treatment packages.

Diphtheria Toxoid, fifteen immunization treatment packages.

Tetanus-Gas Gangrene Antitoxin (Lederle).

Gas Gangrene Antitoxin (Polyvalent) Refined and Concentrated without Tetanus Antitoxin (Lederle).

### MEAD JOHNSON & CO.

Mead's 10 D Cod Liver Oil with Viosterol.

### NATIONAL DRUG CO.

Diphtheria Toxin-Antitoxin Mixture (Diphtheria Prophylactic), one hundred and fifty 1 c.c. vial packages.

Diphtheria Toxoid, immunization treatment packages: five (three dose); fifty (three dose); one, five, ten, fifteen, fifty (two dose).

Schick Test.

Schick Test Control.

Tuberculin Old (Human).

### PARKE, DAVIS & CO.

Parke, Davis & Co.'s Viosterol in Oil, 250 D.

Parke-Davis Cod-Liver Oil with Viosterol, 10 D.

### WINTHROP CHEMICAL CO., INC.

Winthrop Viosterol in Oil, 250 D.

A. M. A., October 18, 1930, p. 1179.)

The following articles have been exempted and included with the List of Exempted Medicinal Articles (New and Non-official Remedies, 1930, p. 477):

### E. R. SQUIBB & SONS

Tablets Digitalis Leaves-Squibb 1 Cat Unit (approximately 1½ grains)

Tablets Digitalis-Squibb 1 Grain (10 minims U. S. P. tincture)

## TRUTH ABOUT MEDICINES

*Gas-Gangrene Antitoxin (Combined) Refined and Concentrated-P. D. & Co.*—An antitoxin serum prepared from the toxins of *B. perfringens* (*B. welchii*) and vibriion septique. The quantity of the finished product in the marketed syringes contains 100 units of each antitoxin. It is proposed for therapeutic use against gas-gangrene infection caused by *B. perfringens* and vibriion septique. It is marketed in syringes containing 100 units of perfringens antitoxin and 100 units of vibriion septique antitoxin. Parke, Davis & Co., Detroit.

*Inhalant Chloretone, Creosote and Eucalyptol-Sorensen.*—It contains chloretone (New and Non-official Remedies, 1930, p. 115) 1.2 Gm. (20 grains); creosote, 2.5 c.c. (40 minims); eucalyptol, 3.75 c.c. (60 minims); alcohol to make 30 c.c. (1 fluid ounce). C. M. Sorensen Co., Inc., Long Island City, N. Y.

*Soluble Gelatin Capsules Parke, Davis & Company's Standardized Cod Liver Oil, 10 minims.*—Each capsule contains 10 minims of Parke, Davis & Company's Standardized Cod Liver Oil (New and Non-official Remedies, 1930, p. 256). Parke, Davis & Co., Detroit.

*Soluble Gelatin Capsules Parke, Davis & Company's Standardized Cod Liver Oil, 20 minims.*—Each capsule contains 20 minims of Parke, Davis & Company's Standardized Cod Liver Oil (New and Non-official Remedies, 1930, p. 256). Parke, Davis & Co., Detroit.

*Soluble Gelatin Capsules Parke, Davis & Company's Standardized Cod Liver Oil, 2.5 Gm.*—Each capsule contains 2.5 Gm. Parke, Davis & Company's Standardized Cod Liver Oil (New and Non-official Remedies, 1930, p. 256). Parke, Davis & Co., Detroit.

*Soluble Gelatin Capsules Parke, Davis & Company's Standardized Cod Liver Oil, 5 Gm.*—Each capsule contains 5 Gm. of Parke, Davis & Company's Standardized Cod Liver Oil (New and Non-official Remedies, 1930, p. 256). Parke, Davis & Co., Detroit. (Jour. A. M. A., September 6, 1930, p. 729.)

*Quinine Bismuth Iodide.*—A substance of variable composition containing between 18 and 20.1 per cent of bismuth, between 48.7 and 53.5 per cent iodine; and quinine. Quinine bismuth iodide is proposed as a means of obtaining the systemic effects of bismuth in the treatment of syphilis.

*Sodium Potassium Bismuthyl Tartrate.*—A basic sodium potassium bismuth tartrate containing from 40.75 to 41.25 per cent of bismuth. It is proposed as a means of obtaining the systemic effects of bismuth in the treatment of syphilis.

*Tartro-Quiniobine.*—A suspension of quinine bismuth iodide and sodium potassium bismuthyl tartrate in olive oil, each c.c. containing quinine bismuth iodide, 0.072 Gm., sodium potassium bismuthyl tartrate, 0.032 Gm., and camphor, 0.003 Gm. It is proposed as a means of obtaining the systemic effects of bismuth in the treatment of syphilis. It is designed to secure both early action through the presence of water-soluble sodium potassium bismuthyl tartrate, and prolonged action through the insoluble quinine bismuth iodide. It is supplied in 2 c.c. ampules. Spicer & Co., Glendale, Calif. (Jour. A. M. A., September 13, 1930, p. 797.)

*Old Tuberculin, Human Strain, Concentrated (New and Non-official Remedies, 1930, p. 360).*—This product is also marketed in packages of two vials, one containing a stated amount of tuberculin and the other sufficient diluent to make six dilutions. Eli Lilly & Co., Indianapolis.

*Chiniofon-Searle.*—A brand of chiniofon-N. N. R. (New and Non-official Remedies, 1930, p. 120). It is also marketed in the form of 0.25 Gm. (4 grains) tablets. G. D. Searle & Co., Inc., Chicago. (Jour. A. M. A., September 20, 1930, p. 865.)

## PROGRESS

Abstracts to be submitted to Section Supervisors.

Members are urged to abstract valuable articles which they run across in their reading and send the abstracts to the physicians in charge of the respective sections. In order to avoid duplication it would be well to communicate with one of the section supervisors before the article is abstracted.

### SECTION SUPERVISORS

#### EYE, EAR, NOSE AND THROAT

Virgil J. Schwartz, M.D.  
617 Medical Arts Bldg.  
Minneapolis, Minnesota

Merritt Wheeler, M.D.  
1027 Lowry Med. Arts Bldg.  
Saint Paul, Minnesota

#### GYNECOLOGY AND OBSTETRICS

Archibald L. McDonald, M.D.  
Lyceum Building  
Duluth, Minnesota

L. W. Barry, M.D.  
810 Lowry Medical Arts Bldg.  
Saint Paul, Minnesota

#### MEDICINE

Richard Bardon, M.D.  
205 West Second Street  
Duluth, Minnesota

Thomas A. Peppard, M.D.  
Medical Arts Bldg.  
Minneapolis, Minnesota

#### PEDIATRICS

Chester A. Stewart, M.D.  
951 Medical Arts Bldg.  
Minneapolis, Minnesota

Roy N. Andrews, M.D.  
Mankato Clinic  
Mankato, Minnesota

#### ROENTGENOLOGY

Leo G. Rigler, M.D.  
University Hospital  
Minneapolis, Minnesota

J. D. Camp, M.D.  
Mayo Clinic  
Rochester, Minnesota

#### SURGERY

A. E. Sohmer, M.D.  
Mankato Clinic  
Mankato, Minnesota

O. J. Campbell, M.D.  
Medical Arts Bldg.  
Minneapolis, Minnesota

### EYE, EAR, NOSE AND THROAT

CAUSE AND TREATMENT OF SOME FRONTAL HEADACHES WITH REPORT OF CASES. Dr. Louis Weiss, Newark (Laryngoscope, Vol. XL, No. 12, December, 1930). The author in this paper discusses the history, etiology and treatment of frontal headaches. He reports thirteen cases, along with diagrams illustrating the deformities of the nose causing frontal headaches. He states that in most cases the patients came to his office thinking that they needed a refraction. In practically all of his thirteen cases, however, their refractive error was found to be practically nil, and the headaches were due to some nasal deformity or pathology. He states that nasal obstruction is usually the cause of frontal headaches. As a consequence of these nasal obstructions there may be present a single or multiple sinusitis. Chronic or acute frontal headaches may be due to nasal obstructions

alone or in conjunction with sinusitis. Nasal obstructions are usually the primary cause and sinusitis the accompanying or secondary cause.

The proper method of treatment is to remove the nasal obstruction first. The author believes intranasal surgery should be performed as early as possible to prevent nasal deformities; that nasal surgery does not usually mean the obliteration of the nasal contents but a rebuilding of the nasal passages to effect normal breathing; that an objection may be registered to insufficient nasal surgery which leaves the patient with the same symptoms as before.

The paper next deals with the treatment of acute sinusitis.

Thirteen cases of frontal headaches associated with nasal obstruction are reported. It is interesting to note that in all of these thirteen cases reported the patients came in complaining of frontal headaches due to what they thought was a refractive error. The subsequent examination, as illustrated by the diagrams accompanying this paper, revealed that nasal obstruction was the cause of the headaches. The proper surgical treatment in these cases resulted in complete relief of the symptoms.

L. G. C.

### CHRONIC SUPPURATIVE OTITIS MEDIA.

Gorge E. Shambaugh, M.D., Chicago, Ill. (Arch. of Otolaryng., Volume 12, No. 6, December, 1930). This article has a decidedly conservative flavor; the author stresses the fact that the really difficult problem is to differentiate between those cases which may flare into intracranial complications, and the much larger majority of harmless cases.

This can only be accomplished by the highly trained otologist who gives more emphasis to diagnosis in his practice than to mere operative technic.

For the serious case which may develop intracranial complications no necessary surgery is too radical to be undertaken. These are the cases of course where there is deep caries or cholesteatoma of the temporal bone. A very foul odor to the discharge, after careful cleansing has been carried out, is indicative of caries or cholesteatoma. So also the location of the perforation in the drum membrane is of importance. Central perforations are usually indicative of a less serious infection. Marginal perforations usually denote bony caries. The size of the perforation is of no particular importance. This is true also of the quantity of the discharge. Usually, when the discharge is mucoid in character and not too offensive, the pathology is confined to the lining mucosa only.

Radical operation is undertaken solely to eradicate the dangerous focus of infection and not simply to arrest the discharge, which, in fact, many times continues after the operation. Hearing is frequently decreased or abolished after healing is complete. Every case should have a fair trial with conservative methods. This consists of simple cleanliness. Debris and granulations must be removed from the fundus of the canal. Dry wipe is favored, followed by a boric alcohol treatment and possibly the insufflation of dry boric acid

powder. Dry wicks in the canal are not favored by the author, who believes that as much can be accomplished by the above simple method as can by any or all of the myriads of methods suggested.

M. W. W.

## GYNECOLOGY AND OBSTETRICS

**INTRATHORACIC NEW GROWTHS:** Stuart W. Harrington (Surg., Gynec. & Obstet., Nov., 1930, p. 647). The author reviews the results of surgical treatment in twenty-four cases. He believes the recent increase in frequency is due to better methods of diagnosis, namely the roentgen ray, rather than to an actual increase. Sarcoma, malignant lymphoma and endothelioma have yielded to x-ray and radium treatment. Adenocarcinoma has not.

Pain, dyspnea and cough were among the chief symptoms. Horner's syndrome was found in three cases. Dyspnea and cough were marked in anterior mediastinal tumors. Vascular changes, not common, were found with tumors of the upper chest and anterior mediastinum.

Of diagnostic methods the general physical examination is of greatest importance. X-ray is the most important single method of diagnosis. Preliminary artificial pneumothorax greatly facilitates x-ray studies by distinguishing intrapulmonary and extrapulmonary lesions on the one hand and adherence of the lung to an extrinsic lesion on the other. Fluoroscopic examination aids in ruling out expansile aneurysms and sub-sternal goiters which elevate on swallowing. Bronchoscopic examination helps by ruling out primary intra-bronchial disease. Injection of the bronchial tree with 40 per cent iodized poppy seed oil is valuable. Exploratory thoracotomy is also resorted to in diagnosis. Pulmonary collapse, one of the associated dangers, is obviated by use of differential air pressure during the operation.

The operative risk is diminished by establishment of preliminary artificial pneumothorax for a few days before operation to allow the patient to become accustomed to unilateral partial collapse and decreased vital capacity. The author says he prefers to operate with intratracheal anesthesia (ethylene and ether) under positive pressure because one never knows when he may accidentally produce a bilateral pneumothorax in these operations. Besides, it is important to fully expand the lung every three to five minutes during the operation in order to ventilate and reestablish circulation. If the tumor is attached to the thoracic wall or springs from the latter, the operative approach is made over the site of the tumor; if the tumor is in the anterior or posterior mediastinum or in the lung, a postero-lateral transpleural thoracotomy is performed. The extrapleural approach is usually unsatisfactory because of the extensive dissection of the pleura off the tumor which is required. Eventual perforation of the pleura with open pneumothorax is very likely. Marked pleural effusion because of the extensive trauma to the pleura is common. Preferably the operation should be

done in one stage. The author had only two operative deaths in his series of twenty-four operated cases. The blood pressure is watched closely and saline with glucose given when the blood pressure falls 10 of Hg., and a blood transfusion when it drops 20 to 30.

The most significant immediate complication is dyspnea with cyanosis. Immediate use of the oxygen chamber is frequently a life saving measure. Later complications are pleural effusion and empyema, notably in cases of teratoma. All patients with these complications in the author's series recovered.

Twelve (50 per cent) of the twenty-four cases of the author's series were benign tumors. However, most intrathoracic tumors are potentially malignant. Eleven patients of this series are living five to forty-one months after operation and all are believed to be completely cured.

The most common tumors of the anterior mediastinum are the dermoids and teratomas. These are usually cystic and, of all the benign tumors, most prone to malignant degeneration. Neurofibromata in the author's series were always in the posterior mediastinum.

Histologically the benign tumors in the author's series were neurofibroma, cellular fibroma, teratoma (dermoid), osteochondroma and fibromyxochondroma. The malignant tumors were osteofibrosarcoma, fibromyosarcoma, fibrosarcoma, fibro-osteochondroma, sarcoma, osteogenic sarcoma, malignant endothelioma, adenocarcinoma, and squamous cell epithelioma (dermoid).

HAROLD J. DVORAK.

## MEDICINE

### TUBERCULOSIS ABSTRACTS\*

The seventh conference of the International Union against Tuberculosis was held in August, 1930, in Oslo, Norway. Representatives from almost every nation attended the meeting. Three main topics were discussed: "BCG Vaccination," led by Professor Calmette of Paris, "Thoracoplasty," opened by Professor P. Bull of Oslo, and "The Teaching of Tuberculosis to Students and Doctors," reported by Professor His of Berlin. Excerpts of the discussions which follow are derived from the Quarterly Bulletin of the Union, Vol. VIII, No. 4.

#### PREVENTIVE VACCINATION AGAINST TUBERCULOSIS BY MEANS OF BCG

Professor Calmette summarized the status of BCG. He defined immunity as a peculiar state of resistance to reinfections, depending on the presence of a few specific bacilli or a benign, non-progressive tuberculous lesion. Attempts to obtain immunity by killed bacilli have consistently failed. BCG is a strain of living tubercle bacilli, the characteristics of which are hereditarily fixed. When injected into the body, it produces tuberculins and exerts antigenic functions. It has lost

\*Reprinted from *Tuberculosis Abstracts*, a review for physicians published monthly by the National Tuberculosis Association, March, 1931, Vol. V, No. 3.



all capacity to give rise to progressive tuberculous lesions.

Immunization can take place at any age, provided the individual is free of any bacillary contamination and reacts negatively to tuberculin. Allergic individuals derive no benefit from BCG. Newborn infants of tuberculous families should be inoculated promptly before they have come in touch with virulent bacilli. The culture may be given hypodermically or by mouth. To be successful, vaccination by mouth must occur within ten days following birth, as during this time the intestinal mucosa consists only of protoplasmic cells, and the living elements of BCG are then easily absorbed and scattered in the infant's lymphatic system.

Since 1924, BCG vaccination has been practiced in seven European, and four South American, countries and has been given a trial in many other countries. Vaccination has no harmful influence; the general morbidity and mortality are less among vaccinated children than among unvaccinated, and the tuberculosis death rate among vaccinated children living in tuberculous families is almost nil. Vaccinated infants must, however, be protected for approximately one month after birth, either by isolating the children from the source of infection or by educating those who care for them. Calmette claims that the objections which have been raised against BCG could not be maintained and that the vaccine should be generally applied.

Several delegates reported the results of their experiments with BCG, which deviated but slightly from those of Calmette. Agreement was, however, not unanimous. Among those who disagreed with Calmette are the following:

E. A. Watson of Canada found in his experiments on animals that BCG has not been entirely deprived of virulence. He had also restored virulence to three strains of BCG as the result of inoculation in serial passages. Dr. Kethner of Germany did not admit the proof that BCG is a fixed virus. Professor Lowenstein of Austria thought that vaccination with living bacilli was a delusion. Professor Morelli of Italy attributed the good results obtained through BCG vaccination to the prophylactic measures which were carried out simultaneously.

#### THORACOPLASTY IN THE TREATMENT OF TUBERCULOSIS

Professor P. Bull described his personal operative technic and the results obtained by him and his colleagues, on which he bases these conclusions:

Patients with unilateral or practical unilateral pulmonary tuberculosis, in whom an artificial pneumothorax cannot be induced or does not yield the desired results, may be cured by a complete or partial extrapleural thoracoplasty alone or in combination with a pneumothorax or exsaisis of the phrenic nerve.

The operation must be undertaken only after consultation with the physician in charge of the case when he has, after a considerable observation period, been able to form a definite opinion on the prognosis of the case.

The other lung must show no clinical signs or, if they exist, they must be slight and stationary.

The extrapleural thoracoplasty is carried out through

a paravertebral incision, with resection of the ribs, from the eleventh or tenth to the first, inclusive.

The resection of the ribs must be undertaken as far back as possible, right up to the transverse processes of the vertebrae.

The two-stage operation gives a lower mortality than the one-stage operation.

The operation does not entail any appreciable permanent discomfort.

The choice between a local and a general anesthetic does not seem to affect the results appreciably.

A thoracoplasty is indicated when improvement has not followed three or four months' sanatorium treatment, and an artificial pneumothorax cannot be induced with success.

Recurrent hemoptyses constitute an additional indication for operation.

Cavities as large as, or larger than, a walnut heal more rapidly and surely after an operation than under expectant treatment.

If a cavity does not collapse completely after a thoracoplasty, it may be made to do so by a pneumolysis and the employment of a fat graft or a paraffin filling, plugging with tampons, or even drainage.

The chronic productive forms of pulmonary tuberculosis are those best suited for a thoracoplasty. It is most dangerous to touch the purely exudative forms.

From 35 to 45 per cent of the patients who cannot be saved by other means may be so by a thoracoplasty, becoming to all intents and purposes fully fit for work.

Some 20 per cent benefit from the operation, but ultimately die of tuberculosis.

Some 6 per cent become worse after the operation.

Some 10 per cent die from operation; *i.e.*, within eight weeks of it.

All sanatorium physicians and general practitioners should know the indications for, and the results of, extrapleural thoracoplasties. No one has any longer the right to withhold from patients suitable for this operation the chances it gives them.

#### THE TEACHING OF TUBERCULOSIS TO STUDENTS AND DOCTORS

Professor His had questioned all civilized countries relative to the teaching of tuberculosis. Replies to this inquiry constitute the basis of the report and justify the following conclusions:

The teaching of tuberculosis must be given within the compass of the clinical teaching of internal medicine, children's diseases, surgery and dermatology.

These clinics must consequently admit a certain number of tuberculous patients in all stages of the disease and maintain, if necessary, a connection with tuberculosis departments in other hospitals, sanatoria, and dispensaries. Students must be given an opportunity to visit sanatoria and dispensaries.

Special courses and opportunities for practical work on tuberculosis should be made available, but they need not be compulsory.

Postgraduate courses for doctors on the pathology, diagnosis, treatment and prophylaxis of tuberculosis must be organized in such a way that every practitioner may get an opportunity, at certain intervals, to bring his knowledge up to date.

Moreover, it is highly desirable that complete courses be organized on tuberculosis as a whole, or on certain specified problems.

A doctor who wishes to improve his knowledge of this subject ought to be given an opportunity to make a practical study visit to a sanatorium or a dispensary.

Medical officers need a thorough training and post-graduate knowledge in this field of medicine.

Attendance at national and international conferences ought to be encouraged by public authorities.

Dr. Willard B. Soper of the United States, one of those who took part in the discussion, remarked that "instruction in the different medical schools shows great differences, which can almost always be ascribed to the presence or absence of one or more individuals on the teaching staff who are vitally interested in this disease, men with whom the study of tuberculosis has become a passion and who find their greatest satisfaction not only in adding to their sum of knowledge but also in imparting it to others."

He described the postgraduate course given at the Trudeau School of Tuberculosis at Saranac Lake, which he regarded as a great influence in raising the standard of knowledge of tuberculosis in America.

## PEDIATRICS

**FEEDING CONVALESCENT CASES OF COLITIS:** Mather Marvin McCord, M.D., Rome, Georgia (Arch. of Ped., Vol. XLVII, No. 11, November, 1930). The lack of proper refrigeration for the care of liquid milk causes much of the summer bowel trouble with infants.

More babies die from starvation during convalescence than during the acute stage of colitis.

Dried milk of the 12 per cent variety furnishes just enough of digestible fats to aid in making a normal soap stool in the child's bowel without throwing a burden on it by feeding milk too high in fats. When the soap stool is formed the food acts as an astringent in the bowel. When this action takes place there is no need for drug astringents.

Dried milk is safer, more easily digested, and more dependable than liquid milk in hot weather. If properly used it will hasten recovery following attacks of colitis.

R. N. ANDREWS, M.D.

**ALIMENTARY ANEMIA:** Wm. Willis Anderson, M.D., Atlanta, Georgia (Arch. of Ped., November, 1903, Vol. XLVII, No. 11). Alimentary anemia as an entity was first described by Czerny in 1912. Kleinschmidt, in 1916, gave a more detailed report of this condition.

The majority of cases of alimentary anemia occur between the ages of three months and two and a half years. Not only is the spleen enlarged in many cases, but the tonsils are also hyperplastic.

Most of the children with alimentary anemia give a

history of having existed almost altogether on a milk diet, whether it be breast milk or cow's milk. Large quantities of milk not only fail to benefit this type of anemia, but, taken without a balanced ration, will cause the anemia to become more severe.

Alimentary anemia may be divided into two groups: **one group of children showing malnutrition**, while the other group appears plump and are hearty eaters. These children may be of average weight or even a little overweight. In both groups the blood findings are identical. There is, more or less, a marked reduction of the hemoglobin. The red cells may be reduced in number or be of an average count. The white cells are usually slightly increased.

As a rule, if the hemoglobin is below 50 per cent it is wise to give human blood, preferably by transfusions. The amount of milk is reduced to a pint or a pint and a half a day, and a more liberal diet prescribed. Iron in some form is usually efficacious, whether it is simple reduced iron, syrup iodide of iron, or ferri carbonas saccharatus.

Although the author believes there is a definite type of anemia which is largely concerned with diet, hygiene, a reserve store of iron in the liver and general bodily development, he feels there are numerous phases in the condition as yet unexplained.

R. N. ANDREWS, M.D.

**DIPHTHERIA OF THE UMBILICUS:** J. S. Montgomery, M.D., Detroit (Amer. Jour. of Dis. of Children, Nov., 1930, Vol. 40, No. 5). Diphtheria of the umbilicus is a disease that is seldom recognized clinically. These cases could be divided into three classes: (1) those showing no clinical evidence of infection, but only positive cultures from a somewhat moist umbilicus, (2) those showing only a slight caseous deposit with positive cultures, and (3) those with more extensive evidence of infection.

Comby points out that diphtheritic infection of the umbilicus does not differ greatly from non-specific infections of the same region, and urges that bacteriologic examination be resorted to more frequently. He also points out that the disease is rarely febrile, and that the infant may continue to nurse and to gain weight, the majority of these patients having gained weight while in the hospital.

R. N. ANDREWS, M.D.

**ACUTE HEMOLYTIC ANEMIA IN CHILDHOOD:** Sylvan D. Lazarus, M.D., Brooklyn (Amer. Jour. Dis. of Children, Nov., 1930, Vol. 40, No. 5). In 1925, Lederer first called attention to a form of acute, rapidly progressive anemia, accompanied by fever, general weakness, marked pallor and splenic and hepatic enlargement, with severe leukocytosis and erythroblastemia. Another striking characteristic of the picture was the rapid, permanent recovery to normal, following a transfusion of whole blood. The recovery not

only demonstrated itself clinically by the general improvement of the patient, but also in the return of a normal hematologic picture.

In reviewing the literature of pediatrics, one finds no direct reference to this entity, although these cases are probably seen and described as acute atypical anemias. Clinically, the picture is so alarming, rapid and severe, that it indelibly impresses one, and the dyspneic breathing and air hunger especially simulate the picture of severe poisoning.

The marked progressive anemia, the general tenderness of the body, the fever, the increased pulse and respiration rates, the suggestive abdominal symptoms, such as vomiting and the tenderness of the abdomen accompanied by splenic and hepatic enlargement, are the cardinal symptoms. The initial blood picture before transfusion is suggestive of severe leukanemia.

The most striking feature of this entire condition is the rapid recovery, judged by clinical symptoms and improvement of the blood picture, following transfusion of whole blood. All the cellular elements of the blood rapidly assumed a normal picture and the abnormal elements, such as nucleated red cells and megaloblasts, disappeared. No icterus was noted in these cases.

Etiologically, nothing has been found as a specific cause, although an infectious origin has been suggested by some authors. Subsequent infections do not cause a return of the syndrome.

R. N. ANDREWS, M.D.

## SURGERY

UBER DIE RESULTATE DER OPERATIVEN BEHANDLUNG DER GRAWITZTUMOREN. E. Ljunggren (*Zeitschrift für Urologie*, 1930, 24:883-894). A report of fifty-eight epithelial neoplasms of the kidney, three of which are classified as adenomata. All were treated by nephrectomy. There were six operative deaths (10.3 per cent).

The author calls attention to several important questions in determining the suitability of a case for operation. For example, nephrectomy was done in two cases with demonstrable pulmonary metastases. The first was symptom-free and gained weight for twelve months, but died twenty months after operation. The second was symptom-free four years after operation, the pulmonary lesions having remained stationary. He refers to the case of Bumpus, whose patient was living and well, his pulmonary metastases having disappeared two and one-half years after operation.

Thirty-nine of the fifty-eight cases had a thrombus of tumor tissue in the renal vein as verified by microscopic examination. Six died from operation. Twenty-six per cent were well five years or more after operation. In four cases it was known that tumor tissue was left in the vein. One of these died of other causes five years and eleven months later, and at autopsy no trace of tumor tissue could be found. The author feels that spontaneous necrosis of the remaining fragment must have occurred and cites the literature to the effect that this is not so uncommon as might be supposed.

Of the fifty-two patients who survived operation, twenty-five died with recurrence, six of these surviving for from five to eleven years, four died of other causes, ten months to thirteen years after operation, while twenty-one were free from recurrence from one to ten years, fourteen being alive more than six and ten more than ten years. Counting the patient who lived thirteen years and died of other causes, there were 19 per cent of ten year cures, while 45.8 per cent of the cases operated upon ten or more years ago survived the ten year period.

The author points out that it is unsafe to speak of cures of shorter duration than ten years, since the literature contained many instances of death from recurrence after that interval.

The paper represents a careful study of the end-results of operation for "hypernephroma" and makes it clear that operation is not contraindicated by the presence of pulmonary metastases, nor the prognosis made completely hopeless by invasion of the renal vein. The number of ten year cures is remarkably high and most encouraging.

DONALD C. CREEVY, M.D.

MIXED TUMORS OF THE KIDNEY IN INFANCY AND CHILDHOOD. H. L. Kretschmer and W. G. Hibbs (*Surg., Gynec. & Obstet.*, January, 1931, Vol. 52, pp. 1-24). The authors report seventeen cases of malignant tumors of the kidney occurring in infants and children. The study brought out the interesting fact that in many instances the true nature of the tumor was not recognized either at the time of operation or at the time histological examination was made. Theories of pathogenesis are discussed.

The involved kidney is globular to oval in shape, solid, opaque, subdivided into lobules and somewhere on the surface a nodule of kidney tissue usually remains. In this series the kidneys weighed from 235 to 1,530 grams. Microscopically there is myxomatous tissue in which gland or duct-like figures are imbedded. Striated and unstriated muscle fibers are other elements seen. Necrosis of the tumor is often marked. Extension and metastasis of these tumors is exceptional unless the original tumor is large.

Clinical features reported are as follows: Sex, 14 males, 3 females; age, 3 months to 6.5 years; side involved, left 10, right 5, bilateral 2. Palpable tumor was the predominating symptom. Fever occurred in nine patients; pain in the abdomen in six. Only one had urinary frequency. Gross blood in the urine is rarely present. In every case there was a secondary anemia.

The authors emphasize the need of cystoscopic and pyelogram studies in making a diagnosis. Prognosis is bad, as sixteen of the seventeen patients died. Case reports reveal that both surgery and deep x-ray therapy were employed in the treatment of these patients, but the authors do not make any recommendations regarding treatment.

HERBERT A. CARLSON, M.D.

## BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

### BOOKS RECEIVED FOR REVIEW

- MICROBIOLOGY AND ELEMENTARY PATHOLOGY.** Charles G. Sinclair, B.S., M.D. 362 pages. Illus. Price \$2.50. Philadelphia: F. A. Davis Company, 1931.
- PRACTICAL TREATISE ON DISEASES OF THE DIGESTIVE SYSTEM (Vols. I and II).** L. Winfield Kohn, M.D., F.A.C.P. 1125 pages. Illus. Price 2 Volumes, \$12.00. Philadelphia: F. A. Davis Company, 1930.
- THE MEASUREMENT OF MAN.** J. A. Harris, C. M. Jackson, D. G. Paterson, R. E. Scammon. 215 pages. Illus. Minneapolis: University of Minnesota Press, 1930.
- PHYSICAL DIAGNOSIS.** Warren P. Elmer, B.S., M.D., and W. D. Rose, M.D. 903 pages. Illus. Price, \$10.00. Saint Louis: The C. V. Mosby Company, 1930.
- A MANUAL OF NORMAL PHYSICAL SIGNS (Second Edition).** Wyndham B. Blanton, B.A., M.A., M.D. 246 pages. Illus. Price, \$3.00. Saint Louis. The C. V. Mosby Company, 1930.
- MEDICAL JURISPRUDENCE (A Statement of the Law of Forensic Medicine).** Elmer D. Brothers, B.S., LL.B. 309 pages. Price, \$3.50. Saint Louis: The C. V. Mosby Company, 1930.
- INTESTINAL TOXEMIA (AUTOINTOXICATION) BIOLOGI-**

**WANTED**—Salaried appointments for Class A Physicians in all branches of the medical profession. Let us put you in touch with the best man for your opening. Our nation-wide connections enable us to give superior service. Aznoe's National Physicians' Exchange, 30 North Michigan Ave., Chicago. Established 1896. Member The Chicago Association of Commerce.

**FOR SALE**—Because of illness a small hospital and practice are for sale at great reduction in town of 800 inhabitants, prosperous community, German or Scandinavian physician preferred. Half cash, balance terms. Address D-121, care MINNESOTA MEDICINE.

**FOR SALE**—Instruments and office equipment of the late Dr. A. E. Comstock. See or address Dr. C. F. McNevin, 714 Lowry Building, Saint Paul, Minnesota.

**FOR SALE**—1 Standard Type "D" X-Ray apparatus 100 P.V.K. with auto-transformer and Rheostat control. Perfect condition. Also new Coolidge tube. Address D-123, care MINNESOTA MEDICINE.

**CALLY CONSIDERED.** Anthony Bassler, M.D., F.A.C.P. 433 pages. Illus. Philadelphia: F. A. Davis Company, 1930.

**PROCEEDINGS OF THE TWENTY-FOURTH ANNUAL CONVENTION OF THE ASSOCIATION OF LIFE INSURANCE PRESIDENTS.** 280 pages. Illus. 1930.

**CERTIFIED MILK CONFERENCES HELD IN 1930.** Proceedings of A. A. M. M. C., C. M. P. A. A. and M. C. M. P. 354 pages. Illus. Detroit: Certified Milk Producers' Association of America, 1930.

**NERVOUS INDIGESTION**—Walter C. Alvarez, M.D., Associate Professor of Medicine, University of Minnesota (The Mayo Foundation). 297 pages. Price, \$3.75. New York: Paul B. Hoeber, Inc., 1930.

In this beautifully written and entertaining little book, we have a discussion of that most common and most neglected of disorders, so-called nervous indigestion.

As we grow older, we almost all appreciate the fact that patients of the "nervous" type do not lend themselves to teaching purposes, so we see little of them in school. The pictures they present are not definite and even if they are presented to us, we disregard them in favor of the definite pathology of ulcer, gall stones and the others. But whether we admit it or not, we all treat patients with functional disorders with more or less functional methods.

"Nervous Indigestion" is, however, not simply a serious discussion of this most important theme, but its sidelights on human nature are so amusing that one is loath to put the book aside until it has been completely read.

H. B. SWEETSER, JR., M.D.

**WANTED**—Capable man licensed in Minnesota to take charge of established eye, ear, nose, and throat practice. Must be able to do refractions. Address D-122, care Minnesota Medicine.

**GOOD OPENING**—For physician in Northome, Minnesota. Surrounding country is good and covers a big territory. Address H. Brunelle, Northome, Minnesota.

**PHYSICIAN'S OFFICE FOR RENT**—Best location Midway district, corner Thomas and Hamline, Saint Paul. Rent \$25.00 a month. Inquire at dentist's office.

## MEDICAL BOOKS

of any author or publisher

ARTHUR W. ISCA

210 So. 7th St.

Elks Building

Minneapolis

The only exclusively medical bookstore in the N. W.